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WHAT MAKES A BANK SYSTEMICALLY IMPORTANT?

HEARING

BEFORE THE

SUBCOMMITTEE ON
FINANCIAL INSTITUTIONS AND CONSUMER
PROTECTION

OF THE

COMMITTEE ON
BANKING, HOUSING, AND URBAN AFFAIRS
UNITED STATES SENATE

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ON

EXAMINING THE CHARACTERISTICS OF BANKS THAT MAKE SOME OF THEM SYSTEMICALLY IMPORTANT

JULY 16, 2014

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WHAT MAKES A BANK SYSTEMICALLY IMPORTANT?

WEDNESDAY, JULY 16, 2014

U.S. SENATE,
SUBCOMMITTEE ON FINANCIAL INSTITUTIONS AND CONSUMER PROTECTION,
COMMITTEE ON BANKING, HOUSING, AND URBAN AFFAIRS,
Washington, DC.

The Subcommittee met at 10:24 a.m., in room SD–538, Dirksen Senate Office Building, Hon. Sherrod Brown, Chairman of the Subcommittee, presiding.

OPENING STATEMENT OF CHAIRMAN SHERROD BROWN

Chairman BROWN. Welcome. The Subcommittee will come to order. First, apologies to the witnesses and those in attendance for the sort of truncated way we are doing this today. There was a vote called late yesterday to be held at 10:15 today. So we have at least two Members of the Subcommittee who I think will join us. Senator Toomey, the Ranking Member, will have—normally he would do an opening statement after I would, and because he was not able to vote and come back as quickly, at the conclusion of the testimony of the four of you, Senator Toomey will certainly be given the right to do an opening statement, as any other Senators who join us will.

Three regional banks are headquartered in my home State of Ohio, one in each of the three biggest cities—Cleveland, Cincinnati, and Columbus. They serve customers throughout the State with other regionals located/headquartered in other States obviously serving Ohio, too.

These banks operate under a very traditional banking model. The CEO of one of them talked about her bank as a "core funded bank," the term she used. They take deposits, they lend lending to families and small businesses. Each has assets of over $50 billion, making them subject to enhanced supervision by the Federal Reserve.

While nonbanks are judged based upon a specific set of criteria, the Dodd-Frank Act requires all banks, as we know, with more than $50 billion in assets to automatically be viewed as systemically important.

Each of these three Ohio banks serves an important role in the communities they serve, but from what I can tell, none of these regional institutions would threaten the United States or global financial system or economy if they were to fail.

Many in Washington attack the Financial Stability Oversight Council, or FSOC, for designating institutions as systemic. Let us

be clear: the $50 billion line was created by Congress, not by FSOC.

Some Washington politicians say that this systemically important designation means that all of these banks are, in parlance we used, "too big to fail."

But financial regulators say that the failure of a $50 or a $60 or a $100 billion bank would not, in fact, threaten the financial system.

This group of 33 banks contains banks with diverse business models—universal banks, regional banks, trust banks, and foreign banks—and diverse geographic footprints—Columbus, Ohio; Pittsburgh, Pennsylvania; Montreal; Salt Lake City, Utah; Santander, Spain.

They range in size from $2.4 trillion, the largest, in assets, those that have been designated, to $56 billion; from operating in 100 countries to operating in just one. Clearly, these banks are not the same.

That is why other rules use different thresholds. For example, banks with $250 billion are subject to a liquidity coverage ratio; banks with more than $700 billion in assets must meet a supplementary leverage ratio.

It is clear that regulators believe that these institutions present different levels of risk. In May, Governor Tarullo said that banks between $50 and $250 billion—which all three of these Ohio banks are, incidentally—are "overwhelmingly recognizable as traditional commercial banks (though a few do have significant capital market or other activities)."

So today we are exploring what makes a bank systemically important by looking at issues like size and leverage and business model and funding sources.

We will consider what the failure of a $100 billion bank, a $300 billion bank, or a $1 trillion bank might mean for the financial system and the economy.

We will look at tools that regulators have—or should have, or your suggestions need to have—to prevent the failure of a systemically important bank, or to protect taxpayers and the economy if one does, in fact, fail.

It is important that we strike the right balance between identifying the institutions and activities that present the most risk while not becoming complacent and not taking our eyes off of potential sources of risk.

I thank the witnesses, and let me introduce each of you, and we will begin the testimony. As I said, at the conclusion of your remarks, if other Senators want to make opening statements, they certainly can.

Dr. Richard Herring is the Jacob Safra Professor of International Banking at the University of Pennsylvania's Wharton School, co-director of the Wharton Financial Institutions Center. Professor Herring is a member of the Systemic Risk Council at the FDIC's Systemic Resolution Advisory Committee. Welcome, Dr. Herring.

Dr. James Thomson is the finance chair at the University of Akron's College of Business Administration. Prior to joining the University of Akron, Professor Thomson held multiple roles at the Federal Reserve Bank of Cleveland, including vice president and finan-

cial economist. He worked as a financial economist at the independent General Accounting Office. He calls Mentor, Ohio, his home. Welcome, Dr. Thomson.

Dr. Robert DeYoung is the Capitol Federal Professor in Financial Markets and Institutions at the University of Kansas School of Business. In addition to his work with the university, Professor DeYoung is a visiting scholar at the Federal Reserve Bank of Kansas City and a senior research fellow at the FDIC's Center for Financial Research. Prior to joining the faculty, Professor DeYoung was an Associate Director of Research at the FDIC, Economic Adviser at the Federal Reserve Bank of Chicago, and a Senior Financial Economist at the Office of the Comptroller of the Currency.

Dr. Paul Kupiec is a resident scholar at the American Enterprise Institute. He joined AEI from the FDIC where he held multiple roles, including Director of the Center for Financial Research. His past experience includes positions at the IMF, Freddie Mac, the Board of Governors of the Fed, the Bank for International Settlements, and JPMorgan's Risk Metrics Group. From 2010 to 2013, Dr. Kupiec served as Chair of the Basel Committee on Bank Supervision Research Task.

Welcome to the four of you. Dr. Herring, if you would begin, keep your comments as close to 5 minutes as you can, and after your conclusion, we will move on. Dr. Herring.

STATEMENT OF RICHARD J. HERRING, JACOB SAFRA PROFESSOR OF INTERNATIONAL BANKING, THE WHARTON SCHOOL, UNIVERSITY OF PENNSYLVANIA

Mr. HERRING. Thank you very much, Chairman Brown. I am grateful for the opportunity to testify this morning on what I think is a very important issue.

Interestingly, the very question of whether and whether it is possible to identify systemically important banks still divides experts. Some people feel that it is both impossible and dangerous to categorize such institutions. I think this is actually unrealistic because we know they exist. We have seen how they benefit from Government intervention. And instead the question should be how we, in fact, limit the category, perhaps reduce it, and try to devise procedures to make these institutions safe to fail.

There has been considerable effort to actually try to devise indicators that would help us understand what this category looks like. The most refined set have been produced by the Financial Stability Board and, of course, amended and revised by FSOC. They include size, and I quite agree with you that size is by no means the only distinguishing feature, and the $50 billion threshold is way too low. They would included interconnectedness, which involves certainly capital market interconnections; cross-border activity; complexity; and the lack of substitutes for the services they provide in the global economy.

These all give you different dimensions. I think they are all important, but I think they are not sufficient in and of themselves.

In addition, there have been considerable efforts in both the official world and the academic world to model sources of interaction and to try to understand the drivers of systemic risk. I think both of these activities are worthwhile. I certainly think they will give

us better insights into what actually drives this problem. But I think in some sense they miss the point.

As a practical matter, what makes an institution systemic is the decision of regulators to intervene and support. And I think it is pretty easy to understand the process.

When you are standing on the brink of what you fear may be a crisis because you do not know the reactions, I think the key determinant for regulators is whether they have resolution tools that they think are reliable. And during the crisis, they did not. So time after time we saw sleepless weekends in which regulators devised really desperate bailout measures that, in the end, probably undermined safety and soundness of the system, but bought it at a very high price in the short term.

The one time they failed to do so with regard to Lehman Brothers indicated why they have taken such pains. Although some people would regard that as a useful application of bankruptcy policy in the United States, I think there is no doubt in the rest of the world it was hugely damaging. And, in fact, we are still trying to deal with the pieces in something like 60 to 70 different bankruptcy proceedings around the world.

While Dodd-Frank, I think, deserves a lot of credit for trying to deal with this problem, part of it simply tries to reduce the probability of failure by increasing the quality and quantity of capital, which I think is very worthwhile. There are other measures which also may be important, but I think we should recognize that it never will and never should make these institutions fail-safe, because, in fact, banks add value to the economy by taking prudent risks—by intermediating between borrowers and savers, by buying and selling risk, and providing reliable payment systems.

But I think the most important part of Dodd-Frank and, in fact, the most remarkable change in the regulatory landscape is the attempt to provide better resolution tools. It begins with living wills, which are supposed to describe the plans that a bank has for rapid solution and the unwinding of the bank, without creating crisis situations for others. These are massive plans. I think there is a danger that some of them are too big to understand, which is a whole new category, at 10,000 pages. But also I think there is a huge lost opportunity in public disclosure. If we want them really to work, we need to inform the public about what the priorities will be and exactly how the authorities will intervene.

In addition, we need better resolution tools. There is a huge effort underway at Stanford Hoover to provide better bankruptcy proceedings. It has just been put on the Web site. There is a Chapter 14 proposal that has been the result of an enormous amount of work by a group of academics. And, of course, there is the Title II resolution procedure by the FDIC. This involves putting the FDIC in a whole new role trying to cope with the unwinding, actually the surgical intervention in a large, sick institution, literally over a weekend. They need to pull the trigger. They need to intervene over the weekend, stabilize, provide capital and liquidity, and open up the systemically important operations.

There are several obstacles that all three of these—both of these resolution procedures face. One of them is how to override ipso facto clauses that could undermine it all. Two is how to provide

sufficient liquidity to maintain confidence. Three is how to sustain international cooperation. And four is something actively considered by the Fed just now: how much debt to require at the holding company level.

I would argue, finally—and this is the end—that not only the level of debt is important but also the kind of debt. I think that if we do not take the opportunity to think about this carefully, we will have missed an important opportunity to improve incentives for banks to manage their risk more effectively and to recapitalize more promptly. But this would require, I think, looking very carefully at the Tax Code because the main hurdle to adopting something like a CoCo appears to be the IRS' reluctance to permit interest payments on CoCos to count as deductions in looking at taxable income.

Thank you very much.

Chairman BROWN. Thank you very much, Dr. Herring.

Dr. Thomson.

STATEMENT OF JAMES B. THOMSON, PROFESSOR AND FINANCE CHAIR, UNIVERSITY OF AKRON

Mr. THOMSON. Thank you, Senator Brown and Members of the Committee, for the opportunity to speak here today. The focus of this hearing, identifying the factors that make a financial institution systemically important, is the first step in designing an institutional and legal framework to rein in the risk of these systemic firms post to the financial markets and ultimately the macroeconomy.

Viewing systemic spillovers as market failure, we need to identify the source, severity, and whether the failure merits Government intervention, and if so, the most economically effective way to structure that intervention.

During a 30-year career as a financial economist, I have studied financial markets, banking, payment systems, failed bank resolution, and the Federal financial safety net from a public policy perspective. The ideas I express today are informed by reading and research I have done in these areas, especially papers on systemically important financial institutions, the need for an asset salvage agency, and systemic banking crises.

One of the things I want to sound today is that "too big to fail" is a misleading term. Size is not the only distinguishing characteristic that makes financial firms systemic. Through my research in this area, I have identified four characteristics, what I call the four C's of systemic importance: contagion, correlation, concentration, and context or conditions.

The factors that lead to institutions being treated as systemically important tend to be prevalent in the larger firms, and that is why size shows up on the list.

In my written statement, I stress how each of these four C's has been part of the rationale for generous Government treatment of the creditors, managers, and stockholders of troubled financial firms. It is important to emphasize that the decisions on how we handle economically failed institutions are themselves an important source of systemic risk. We need to understand whether an in-

stitution authorities label as systemic in the handling of its economic insolvency are truly systemic or merely politically expedient.

The Dodd-Frank Wall Street Reform and Consumer Protection Act, enacted in 2010 in response to the recent financial crisis, contains numerous reforms to the financial system and supervisory infrastructure. In my written statement, I provide my thoughts on Dodd-Frank's provisions dealing with systemically important institutions. In the interest of time, I will skip over that section of my written statement and spend my remaining time on the need for supervisory contingency or disaster plans—a missing element of reform.

Systemic importance reflects constraints faced by financial market supervisors in enforcing timely closure rules. It does not matter what powers Congress gives financial supervisors to conduct orderly resolutions of financial companies if the regulators remain reluctant to use them. A major step forward to limiting systemic importance is requiring financial system supervisory agencies to develop and to commit to contingency plans for handling the failure of one or more systemically important financial firms.

These contingency plans should contain a series of options, actions taken to contain systemic spillovers, with blanket guarantees of all creditor/counterparty claims to be, without exception, the last option on the list. Scenario analysis should be used to test and refine these disaster plans. Much as Dodd-Frank Section 165 resolution planning by systemically important firms is intended to promote the orderly resolution of these firms—whether it be through bankruptcy or through FDIC receivership—supervisory disaster plans should allow for resolution of systemic firms with the least impact on long-term incentives facing these firms.

Dodd-Frank was hailed by its drafters as the antidote to too big to fail. While provisions in this important reform legislation move us toward the goal of reining in the effects of systemic importance in the financial system, much remains to be done.

Thank you.

Chairman BROWN. Thank you, Dr. Thomson.

Dr. DeYoung.

STATEMENT OF ROBERT DEYOUNG, CAPITOL FEDERAL DISTINGUISHED PROFESSOR IN FINANCIAL MARKETS AND INSTITUTIONS, UNIVERSITY OF KANSAS SCHOOL OF BUSINESS

Mr. DEYOUNG. Thank you, Senator Brown, for inviting me to address the Committee today.

When you invite four economists to address the Committee and the first three of them tell you virtually the same thing, I think you will be happy. My remarks are quite consistent with what Professor Thomson and Professor Herring had to say.

The Dodd-Frank Act contains new measures aimed at reducing systemic risk at U.S. financial institutions. From my perspective, these measures can be divided relatively neatly into two different categories.

On the one side, we have ex ante measures that try to make banks' balance sheets resilient to systemic macroeconomic events. Some key examples of this, of course, are higher minimum capital ratios, liquidity ratios, and regulatory stress tests.

On the other side, we have ex post measures that try to limit the amplification of systemic events—contagion—caused when banks default on their financial obligations. This approach centers on the FDIC's orderly liquidation authority and the information made available to the FDIC in living wills.

It has been my observation that we pay most of our attention to the ex ante systemic risk prevention measures—they are important measures—setting rules and limits for banks; and we tend to have less confidence in ex post measures designed to contain systemic risk once it rears its head.

In 2006, just a year before the financial crisis began, the average U.S. banking company had nearly double the risk-weighted capital ratios necessary to be deemed "well capitalized" by bank regulators; 95 percent of all banking companies at that time cleared the adequately capitalized threshold by at least 300 basis points. As we know, these large stores of equity capital were not by themselves large enough to prevent hundreds of bank insolvencies in the years that followed. Accordingly, Dodd-Frank and Basel III require higher levels of capital for banks. As I said, this is clearly important and a step that we must take. But we cannot forget that restrictions like these impose costs on banks that ultimately result in fewer financial services being provided.

Now, in the shadow of the financial crisis, this may seem like a very wise tradeoff. We accept less lending and slower economic growth in exchange for a reduction in the severity of the next systemic financial event. But the orderly liquidation powers in Dodd-Frank provide us with a historic opportunity to avoid having to accept this tradeoff. OLA should allow us to not only limit the contagious aftereffects of a systemic crisis, but also to establish a newly credible regulatory regime that is devoid of the too-big-to-fail incentives that have so long fostered risk in our financial system.

The economic logic is a straightforward story. When investors become convinced that large complex banks will, in fact, be seized upon insolvency—with shareholders losing everything and bondholders suffering losses—then credit markets and equity markets will more fully price bank risk taking; profit-seeking banks will then face clear incentives to reject high-risk investments ex ante.

That is the economic story, but the political story is far from straightforward. OLA requires bank regulators to credibly establish that they can and will seize, unwind, and eventually liquidate large complex insolvent banks. The FDIC's "single point of entry" plan I think is a workable plan. Nevertheless, in my discussions with scores of banking and regulatory economists across the country, I meet with a near uniform skepticism that the FDIC will be permitted to fully exercise its new resolution authorities during a financial crisis when multiple large banking companies are nearing insolvency. Essentially, their belief is that the deeper the financial crisis, the greater the probability that OLA will be suspended.

So, in my opinion, the most important actions that Congress and the administration could take to limit systemic risk in the financial system is to strongly and repeatedly enunciate their support of orderly liquidation authority and to pledge that they will not stand in the way of its implementation during a deep financial crisis. Our banking system is most effective when scarce economic resources

are moved from poorly managed banks to well-managed banks. Hence, we do not want a banking system that is devoid of bank failure; rather, we want a banking system that is resilient to bank failure. And I think orderly liquidation authority is essential to establishing this resiliency.

Thanks again for inviting me, and I look forward to any questions you might have.

Chairman BROWN. Thank you, Dr. DeYoung.

Dr. Kupiec.

STATEMENT OF PAUL H. KUPIEC, RESIDENT SCHOLAR, AMERICAN ENTERPRISE INSTITUTE

Mr. KUPIEC. Thanks, Chairman Brown, Ranking Member Toomey, and distinguished Members of the Subcommittee. My written testimony addresses the specific questions posed in the Subcommittee's letter of invitation. In my oral testimony, I am going to skip over the details for the most part and provide an overall perspective on the issues that are raised in this hearing.

The Dodd-Frank Act made sweeping changes in the way U.S. banks and financial markets are regulated. Four years on, required rulemaking continues, and the implications of the legislation are only still being discovered.

The overarching Dodd-Frank goal is to prevent another financial crisis, and I doubt anyone would speak against this goal. But in attempting to achieve the goal, Dodd-Frank includes a large body of poorly balanced legislation. It grants regulatory agencies vast new powers to regulate and allows these powers to be exercised with almost no checks and balances.

The power and discretion granted by the act are problematic because the duties and responsibilities assigned by the act are vague and ambiguous. The agencies and the FSOC are directed to exercise new powers to ensure financial stability and mitigate systemic risk. But financial stability and systemic risk are never defined in the legislation.

The mix of new unchecked powers and vague, ambiguous goals is a toxic for economic growth. For example, what does "ensure financial stability" mean? Does it mean regulators need only focus on preventing another financial crisis? Is that the only job?

The duties and responsibilities assigned by the act never recognize a link between economic growth and financial intermediation. Financial intermediation is necessary for economic growth, and if intermediation is restricted, economic growth will suffer. Financial crises devastated economic growth because the crises interrupt financial intermediation. Similar forces operate in noncrisis times. If regulations impede financial intermediation, they will also reduce economic growth.

The Dodd-Frank Act does not recognize this tradeoff. Instead, it builds in a bias for overregulation. There is no regulatory reward for preventing a financial crisis, but regulators will certainly be disgraced, if not punished, should there be another financial crisis. So what are their incentives?

The issue is analogous to monetary policy where decades ago it was recognized that price stability cannot be the only goal of the Federal Reserve. It must balance price stability against goals of en-

couraging employment and economic growth. The Dodd-Frank Act lacks this balance and instead directs agencies to use their new powers to stop bad intermediation. But do regulators, councils, or even us economists have the judgment and ability to identify and stop only bad financial intermediation? And is this ability so trusted that we should be able to carry out this vague assignment without supervision and review?

History suggests not, but this is what the Dodd-Frank Act does. Section 113 of the Dodd-Frank Act provides a concrete example. It grants the FSOC the power to designate nonfinancial intermediaries for enhanced prudential supervision and regulation by the Board of Governors. The standard for designation is vague. It puts very few constraints on the FSOC's designation ability. For example, the FSOC is not required to identify specific issues or features that mandate designation or demonstrate how an FSOC designation will mitigate risk. And so the FSOC has not provided these details.

There is no link to Title I orderly resolution plans in that statute even though a key standard for designating a firm involves the risk that failure of the firm generates systemic risk. Why isn't a firm required to submit a resolution plan as part of the designation process? Would a good review preclude designation? Perhaps. But then the adequacy of the orderly resolution plan is determined solely by the regulators' subjective judgments, so maybe the added work would not amount to much.

In my written testimony, I discuss many specific examples where underlying imbalances of the Dodd-Frank Act lead to overregulation. Other specific examples of overregulation include designating all bank holding companies larger than $50 billion for heightened supervision and prudential standards.

Another example is the Board of Governors' stress test and the power for regulators to restrict the use of short-term debt.

I have also discussed instances where the new Dodd-Frank Act powers will not achieve intended goals. In particular, I identify missed opportunities regarding duties assigned under the Title I orderly resolution plan process, and I also point out serious shortcomings in Title II orderly resolution authority.

Under the FDIC's single point of entry resolution strategy, Title II creates new uncertainties for the resolution of large financial institutions, and it potentially extends the Government's safety net beyond the guarantees provided under the deposit insurance resolution system.

Thank you, and I look forward to your questions.

Chairman BROWN. Thank you, Dr. Kupiec.

Senator Toomey is recognized for an opening statement. Thank you.

STATEMENT OF SENATOR PATRICK J. TOOMEY

Senator TOOMEY. Thank you, Chairman Brown. I want to thank our witnesses for joining us today. This is an important topic.

Dodd-Frank obviously deals with the whole too-big-to-fail issue in a number of ways. One of the major ways is through the SIFI designations, which I would argue then precipitate the micromanagement of these financial institutions by a host of regulators in what

will, in my view, ultimately be a futile attempt to make failure impossible.

I see a lot of problems with this approach. One is that institutions end up being designated as SIFIs, despite the fact that they are not systemically dangerous to our economy.

The second problem is that the layers of regulations impose real costs. There are direct costs of compliance, and then there are all the indirect costs of a reduction in innovation and dynamism that comes when regulators have the power to run these financial institutions like public utilities, which is really where we pretty much are.

And, finally, of course, the regulators themselves, as we know, are not omniscient. They are not going to be perfect. They are not going to always get it right, and in the end, eventually institutions will fail anyway.

Dodd-Frank deals with the failure itself, of course, through the orderly liquidation authority, the failure of a SIFI, and I have major, major reservations about this. Some of the problems that worry me is, number one, the highly subjective nature of this process; the extensive discretion that is given to the regulators in implementing it; the fact that there is no real option for restructuring when; in fact; that might be the best solution for an institution; the fact that creditors have no certainty because we grant discretion to the regulator to decide which of the various equally standing creditors are more equal than others; and, finally, there is an explicit bailout mechanism that is written into the statute in the orderly liquidation authority, and I thought we wanted to move in a direction where we would not permit taxpayers to have to be bailing out these institutions.

So I will now blatantly and shamelessly plug my bill, Mr. Chairman, which repeals the orderly liquidation authority and instead makes the necessary reforms to our Bankruptcy Code so that in the event of the failure of a large complex financial institution, we would have a rules-based, transparent, credible way to resolve that institution without all of these problems that I think are inherent in the orderly liquidation authority. But I digress, and I appreciate your indulgence.

The issue more at hand I think for this hearing is some of the problems that Dodd-Frank imposes, particularly on regional banks. This goes right to the issue of designations. In my view, there is nothing magic about a $50 billion threshold above which we ought to automatically assume every institution is systemically important and significant and dangerous. That threshold, of course, gives no consideration to the activity of the bank, the nature of the bank's activities and whether or not it gives rise to these risks. And then the overregulation that comes with the enhanced prudential standards are enormously problematic.

A couple of issues that I would like to hear about today that concern me as they affect regional banks is the liquidity coverage ratio. Again, it seems to me that this rule will treat regional banks as though they were very large, complex, internationally active, money center Wall Street-type banks, when, in fact, the nature and activity of these regional banks is nothing like that of the large, complex, money center banks.

The comprehensive capital analysis and review and the supervisory stress tests, another very, very onerous regulation that we could debate whether or not it makes sense for the biggest of banks. I do not see how we can defend the proposition that small regional banks with a simple business model should be subject to the same kinds of tests.

So these would be some of the things I hope we can discuss, Mr. Chairman. I do oppose the overall framework of Dodd-Frank, but it seems to me a couple of the most egregious laws are subjecting financial institutions that are not, in fact, systemically risky to these very onerous regulations imposes a real cost. At the end of the day, it means credit is less available and less affordable for American consumers and businesses, and that is what is happening today that I believe is a direct result of Dodd-Frank. And so I am looking for ways to relieve that problem that we have created.

I thank you for your indulgence.

Chairman BROWN. Thank you, Senator Toomey. Let us begin the questions.

Observers note the financial system was generally able to absorb in 2007 and 2008 the failures of regional banks and thrifts. Perhaps one of the most notable was in Dr. Thomson's home State, Cleveland, with National City absorbed by PNC out of Pittsburgh, causing certain hardship in that city, in our State, and job loss. But the system absorbed it without great damage, obviously, to the stability of the system. FDIC sold a $307 billion Washington Mutual at no apparent loss to U.S. taxpayers.

So my question to all four of you, and I will start, Dr. Herring, with you: What would happen today if a $250 billion or a $150 billion or a $50 billion systemically important bank, SIFI-designated bank, were to fail? Would we need a megabank like JPMorgan to absorb it, to rescue it? As you answer that, each of the four of you, talk to us about industry concentration, if that would be the logical outcome of more concentration as we saw between 2007 and 2010. Dr. Herring.

Mr. HERRING. I certainly agree that the legislation sets the threshold way too low. There is nothing magical about $50 billion. I would argue that—well, if you take a look at the Financial Stability Board's list of global systemically important institutions, it contains 8 American banks out of 29 international. And that range of eight banks ranges in size from JPMorgan Chase, which is about $2.4 trillion, down to State Street Bank, which is about $220 billion. So the current criteria do have a nuanced effect. They do rely on much more than just size. And I think it is highly unlikely that any bank that has a strictly regional footprint should really be regarded in the same rubric at all. And I quite agree that overregulation is a tremendous threat, that, in fact, the biggest growth in the banking industry over the last 3 years has been in the employment of compliance officers. Having some is good, but certainly that should not be the main thrust of bank growth these days.

On the other hand, I think it is dangerous to rely on forced mergers that are arranged over a weekend as a way out. I think one of the huge mistakes that was made during the crisis was relying on really Government-assisted concentration in the system. I think we have ended up with the result where we started with banks

that were too big to fail and ended with banks that are emphatically too big to fail, which is a terrible mistake.

I think the resolution process should make sure that the bank that emerges from the resolution process is no longer too big to fail in any dimension. If that means breaking it up into smaller banks, I think that is a good thing to do. We do not want these institutions rattling around that can cause the regulators to take destructive actions in the belief that they are saving the system in the short run but actually undermining long-term discipline.

So I have enormous sympathy with the thought that you should treat these smaller banks and the larger regionals quite differently, but I am not sympathetic to the thought we should merge them with the giants.

Chairman BROWN. So, Dr. Thomson, what would happen if one of them failed?

Mr. THOMSON. I do not think the implications of one of them failing other than the impact on the region itself is going to be that great. It is not going to send the shock through the financial system that taking down a very large institution would, because quite simply they are not as interconnected, they are not carrying as much of the off-balance-sheet types of risks that are more difficult to trace. And I think from the standpoint of employment in the region, the failure of a large regional bank is an issue, but it is not a threat to the national financial system. You will get some local impacts on credit availability, and I think the big trick here is the way we have always dealt with large company failures is to find a larger company to put them into, creating larger and larger companies. So we go from a financial system where the top 10 or 15 banks had about half the assets to one where the top 4 have something on order of like 70 percent of the assets?

So I agree with Dr. Herring that we need to find a way to do this that does not just assemble these megabanks and that takes into consideration that the end product will not be a bigger bank that is a bigger problem than what we had to begin with.

Chairman BROWN. Dr. DeYoung.

Mr. DEYOUNG. Well, I also agree with Professor Herring that a blanket $50 billion threshold for SIFIs is too low. FSOC has the authority to declare a bank a SIFI regardless whether it is a larger or smaller than that. So the blanket at $50 billion is too low.

You asked about concentration. I want to make clear that the concentration of power and influence among a smaller number of financial institutions is far more dangerous than any pricing or market power concentration that would happen. The banking system in the U.S. is far from concentrated in a pricing standpoint. We have high levels of competition. Concentration of large banks together is more of a question of whether they gain influence.

And to your question about what would happen if a $200 or $300 billion bank failed, a systemically important bank failed, well, I am going to line up with Dodd-Frank and say that the FDIC would then exercise its orderly liquidation authority, if allowed to do so. The question is—there are two questions here. One is whether they are allowed to do so, and I have no horse in this race. I know Senator Toomey favors a rewriting of the bankruptcy laws to allow us to handle bank insolvencies that way. The issue is that we actually

do it and we actually are able to resolve these systemically important institutions without disrupting financial markets. And I believe we can do it within the OLA authority within the Government. We can do it through a rewriting of the banking laws. Either way, the crucial thing is we actually do it and establish credibility that it will be done. And I have had occasion to speak with the folks at the FDIC a couple of times about how they would do it, and specifically how quickly this process would run. And I myself would prefer a slow process in which contracts are allowed to run off, the bank is allowed to stabilize. Yes, we have losses, but we do not race in order to find a buyer for that bank, that we use the word "liquidation" and that we take that word seriously, that we stabilize the bank, we liquidate it if possible into pieces, and not resolve that at the end through some kind of a large purchase and assumption merger.

Chairman BROWN. Thank you.

Dr. Kupiec.

Mr. KUPIEC. Thank you very much, Chairman Brown. This is a very important question, and it is actually a question that is at the heart of the whole SIFI designation Dodd-Frank process.

When you say would a bank of this size be systemically important and should it be designated, well, if it fails in isolation, certainly not. What happens if it fails in a real crisis when many banks are failing? That is the problem. And the problem in Dodd-Frank, Dodd-Frank is ambiguous. It does not say when a failure is supposed to cause systemic risk. And this is a real ambiguity, so you do not know how the FSOC or anybody else is actually evaluating the circumstances surrounding the failure, and that is an ambiguity that really should be taken care of. We need to specify under what conditions it will be a problem.

I have suggested in my written testimony—I have a pretty lengthy part on it, on this issue, about regional banks, and I agree with my colleagues that a regional bank should be broken up, and that—if it could be broken up in a resolution, that means it is not systemic.

What I think this needs to mean—and this is my reference to the lost opportunity under the Title I authority—is that when you do an orderly resolution plan and submit it to the FDIC and the Federal Reserve Board, the FDIC should be required to figure out that if that bank were to be taken into a regular FDIC resolution, not a Title II resolution but through the normal FDIC resolution process, how would the FDIC break that bank apart?

Now, there are a lot of problems with breaking a bank apart. Historically, when the FDIC gets a big bank, it sells the bank in a whole-bank transaction. And there is a legal reason for that. Under FDICIA, the FDIC is required to resolve a bank in a way that is least costly to the Deposit Insurance Fund. And a whole-bank resolution is almost always the least costly way to resolve a bank. So, legally, if there is a whole-bank bid for a very large bid, under current law if it is an FDIC resolution, an FDI Act resolution, the FDIC does not have a choice. They cannot take the bank into a bridge bank and take all the time to break it apart if it will cost more. And it almost certainly will cost more. But the time taken to bridge a bank in the resolution process and break it apart

is the price we have to pay to reduce systemic risk. But to do that, you do not need Title II. You just need to use Title I, the plan, the planning part, and change the law so that the FDIC is required to break large banks up when it resolves them.

In that case, there would be no reason to treat—in my opinion, at least most of the things that we would call regional banks now, $250 billion or less that mostly do commercial banking in a region, most of those do not have any business being designated at all.

Now, again, if all of them are in trouble at the same time, we have a problem. You cannot—unless you are willing to let the FDIC bridge all these banks and run them until they can sell them. And even under Title II we have a problem because you have still got the FDIC bridging banks and breaking them apart.

So the problem is not really solved in the context of a true financial crisis when there is a problem and lots of banks get in trouble at once.

So I think there is still a lot to work on here. I think that is when contingent capital—although it is not a resolution, it is a reorganization, but contingent capital has a lot more promise in a systemic crisis when many large institutions would be in danger of a Title I or a Title II or direct Government guarantee.

So I could speak more about the Title II and why the bank—why the FDIC needs to take over the holding company. There is the whole case of NexBank in 2002 that was a horrible resolution experience for them. I am happy to talk about that at length, but I think I should stop now.

Chairman BROWN. Thank you, Dr. Kupiec.

Senator Toomey.

Senator TOOMEY. Thanks, Mr. Chairman.

A quick follow-up on some of the points that Dr. DeYoung made, which I thought were some thoughtful and interesting points on managing a resolution through Title II. But it strikes me that parts of Title II are problematic in the way they are written, problematic in doing a slow process. It seems that Title II is effectively mostly an execution order. The bank gets executed. I mean, that is the purpose as a practical matter. Management has to be all fired regardless of which managers are actually at fault. That does not distinguish—and, frankly, I would really seriously question the competence of the FDIC to run JPMorgan Chase or to run Lehman Brothers. The FDIC is competent at rolling up small banks over a weekend. There is no question about that. But running a $2 trillion multinational that is enormously complex, I really rather doubt it. But this is probably a better topic for a different time, if we could.

I want to go back to observing a very interesting agreement that I discerned, I think, which is I think every single panelist here said that it does not make sense to have an automatic SIFI designation at $50 billion by virtue of that criteria alone. That is an important agreement because, of course, the law does exactly that.

So I share that view, but rather than trying to guess what the right number is, because, frankly, I do not think $75 billion is the right number either, I wonder if each of you would comment briefly on whether we should have qualitative criteria instead of an arbitrary dollar value of assets, things like funding sources, capitalization, liquidity, the composition of assets, other criteria that we

might use rather than pick some other arbitrary number above which we would designate everybody for this very expensive, in my view, overregulation. Dr. Herring, if you would begin.

Mr. HERRING. Yes, I think that the international agreement on identifying global systemically important institutions actually does speak to your point. They do have five quantitative indicators, but there is a clear role for a judgmental override that must be clearly stated. And that is how, in fact, we get some smaller banks, and some of the bigger banks that actually do not have systemic implications are not included.

Senator TOOMEY. Could I just suggest, adding a subjective element would be one way to get away from a numerical hard and fast——

Mr. HERRING. A judgmental, a qualitative——

Senator TOOMEY. Right. But we could also have other quantitative measures.

Mr. HERRING. You could.

Senator TOOMEY. Like liquidity and capitalization and off-balance-sheet——

Mr. HERRING. Those are included.

Senator TOOMEY. ——activity here they may or not be subjective. They could be fairly——

Mr. HERRING. No, those are all included in the quantitative indicators. Each of those——

Senator TOOMEY. Not under Dodd-Frank, right?

Mr. HERRING. Not under Dodd-Frank, but under the FSB, which I think had the benefit of coming after Dodd-Frank.

Senator TOOMEY. Right.

Mr. HERRING. And, frankly, did a more sophisticated job of looking at this question. Congress did this in an immense rush, and I do not think it was a very thoughtful solution.

I would also add that I share your interest in having sort of better procedural clarity, and I think better bankruptcy laws could be helpful. I would commend the work of the Hoover Stanford group. I must confess that I played a minor role in it, but it has just been published, a Chapter 14 proposal, that would, in fact, amend the Bankruptcy Act to deal with financial——

Senator TOOMEY. I would just point—their work very significantly informed my judgment as we developed our legislation.

Dr. Thomson.

Mr. THOMSON. I do not think that having a hard and fast number, a bright-line rule in legislation like the $50 billion or $250 billion, is useful for making the designation. Now, it may be useful to have a rule where you automatically review a company for that designation, but not designate them until you look at the number of factors, liquidity, their interconnectedness, their importance in a particular financial market, and if somebody clears 40 percent of the derivative contracts of a certain type, that should probably go into your consideration as to whether or not they are systemically important or not.

So I think having some benchmark but being just a guideline we will automatically review for this would be the way to go, but then to dig deeper and understand what are the very things that are going to prevent us from either in isolation as a single institution

or as a group of institutions take them down, which is part of the reason why I mentioned in my remarks, we should be developing these contingency plans by the regulatory agencies on how would we actually take these institutions down.

Now, the living wills that are in Dodd-Frank is a piece of the information of how do we go about that. When we develop these plans, that would tell us where the pressure points in the system are, ones we need to address in identifying which institutions are the problem.

Senator TOOMEY. But what I understood you to say is that you agree with the premise that the actual activities of the bank ought to be given more weight than an arbitrary dollar value of assets?

Mr. THOMSON. Yes, any threshold set using the dollar value of assets is inherently arbitrary, my work shows size is not the determining factor. It is the activities themselves. And it just turns out that really large banks tend to be in all the activities that leads us to consider them systemically important.

Senator TOOMEY. All right. Thank you.

Dr. DeYoung.

Mr. DEYOUNG. Yes, you have put your finger on one of the potential weaknesses of orderly liquidation authority, and that is, who will run these institutions after we excuse the board and the top management?

A couple of things. One is, of course, at that point the bank will be run in a very different way with a very different objective function. The objective will be not to grow the bank, not to look for risk opportunities, not to look for growth opportunities, but to service the customers, to allow financial contracts to run their course, and to stabilize the finances of the bank. So the challenges are a little bit different. We would need to know where all the bodies are buried, of course, and hopefully the orderly—the living will would do that. But it may not be as big a challenge as one would think. This does speak to the concept, to the question of credibility. This is all part of what we will find out when we allow the FDIC or a bankruptcy court under a different set of rules to resolve one of these large banks in a slow and thoughtful way. Credibility has to be established, and as we do that, of course, we will make mistakes. But, you know, the first time we go through this, it is not going to be perfect. Losses do have to be taken somewhere.

Senator TOOMEY. Dr. Kupiec.

Mr. KUPIEC. Yes, thanks. I think this whole thing is a fundamental problem because systemic risk is not really a very well developed science. It really became popular, a popular thing to talk about, to write papers about, after the crisis. The economics and the science really are not sound and there yet. Of course, we all know we think systemic risk exists because we saw the crisis.

Now, in terms of size alone as a cutoff, I agree with you that any arbitrary size is—there is no science that supports a $50 billion—I have that in my testimony, I agree. It doesn't support any number. But if the pure economics of it is, especially in the case of a bank, size is related to the damage it would cause to the economy if you were to lock it up and shut it down and freeze everybody that uses that bank for financial intermediation.

Now, the reason we do not see size mattering in modern times is because we already had in place mechanisms to prevent the bank intermediation function from getting locked up. The FDIC stepped in, and it sold the bank to another bank. And so there was a small disruption and some problems there. But more or less the economics smoothed out because the FDIC had already stepped in.

Back in the 1930s, when you did not have that process, it was a really bad time. You lost access to credit, financial intermediation, deposits got locked up. It was really bad for the economy.

So the reason we do not see large bank failures per se having an effect on the economy is largely because we had things in place for a long time that helped fix that. So size clearly does matter for systemic risk, pure and simple, but we have things that can handle the systemic risk associated with many of these things. It is only when you get to the very large banks that either the things we have in place now make bigger banks—that is the way we fix it, we put a failing big bank into another big bank, and we create another bigger bank. You can only play that game for so long, and we are kind of at the end of that route. Or we do something else.

And this breaking apart of the bank—and I am on board with Bob in that, but I do not think you run the bank's business down. I think you have to run it as a bank, but you have to split it up and sell it, because if the bank really does have important functions and you really take over that bank and you say, OK, now we are in lockdown mode, all these things have to stop, you have to stop lending, it is just run off contracts, but then you are going to impose financial losses.

So I think you have to run the bank, but you have to plan to break it up in the resolution process if you get there. And I think that should be through Title I and deposit insurance. The holding company issues I think should be solved through the Title I process, and I think about it that way. But I think there is a tradeoff here, and we do know from history that, you know, just holding onto the bank and running it down, you know, is not going to be as smooth as a whole-bank resolution has been in the past.

Thanks.

Chairman BROWN. Senator Warren.

Senator WARREN. Thank you, Mr. Chairman. Thank you all for being here.

I want to focus on another part about SIFIs. Last week, the new Vice Chair of the Fed, Stanley Fischer, spoke about the Fed's role in financial reform, and he made some claims about the too-big-to-fail problem that I would like to be able to get your comments on, and I am just going to kind of break it apart into the different claims he made.

His first claim was that the evidence was basically mixed on whether bigger banks take on more risk than their smaller counterparts. And I find that hard to believe, particularly for banks in the United States.

Professor DeYoung, you have noted that four out of ten of the biggest U.S. banks in 2008 either failed or had to be bailed out. That is a 40-percent failure rate. By contrast, only 6 percent of smaller banks failed during the crisis.

So, Dr. DeYoung, given those data, is it fair to conclude that bigger banks, say those over $500 billion in assets, tend to take on more risk than their community bank and regional bank counterparts?

Mr. DEYOUNG. Well, thank you for reading my research, or thank you to your staff for reading my research. I appreciate that.

I think it is unquestionably true that, on average, larger banks are involved in riskier activities. And in the end, at least over the most recent distress we have gone through, they are failing in larger proportions, and I think you have to be blind to conclude otherwise.

Senator WARREN. OK. Good. We have got a point one.

Mr. DEYOUNG. That is point one.

Point two, though—point two, though, is have we done things to—is it size alone that is causing these banks to take more risk?

Senator WARREN. Well, we are going to come there.

Mr. DEYOUNG. Yes.

Senator WARREN. We are going to come there; I promise.

Mr. DEYOUNG. Very good. OK.

Senator WARREN. OK? Because we are just going to do these, though, by pieces because I want to make sure I am getting them.

Mr. DEYOUNG. Very good. I am going to hold you on that.

Senator WARREN. All right.

Mr. DEYOUNG. OK.

Senator WARREN. The second one is about the question about economies of scale for big financial institutions.

Vice Chair Fischer addressed the economies of scale, saying whether or not banks become more efficient and reduce their marginal costs as they grow bigger, and he pointed to recent studies that say that such economies of scale exist even for the largest banks.

So I am a little skeptical on the point, but I want to open it up to the panel. Does JPMorgan, for example, really become more efficient when it grows from $2.4 trillion to $2.5 trillion, or we will do an even bigger leap, when it grows from $1.5 trillion to $2.5 trillion?

And I will just go down the list here. Dr. Herring.

Mr. HERRING. I think that is—oh, excuse me, I think that is a very difficult issue.

All the evidence until very, very recently has indicated that economies of scale peter out at a level well below the $250 billion mark. And, in fact, if you look at banks of any given scale, the difference in efficiency between the most efficient bank and the least efficient bank is much, much greater than anything you could get out of scale and scope.

There has been some very recent research actually done by the new President of the Cleveland Fed that suggests otherwise.

What concerns me about this is that I do not feel comfortable that it has taken into account the too-big-to-fail advantages, nor do I think that it has taken into account the obvious diseconomies of management. It is very, very difficult to manage one of these institutions. It is humanly impossible to understand everything that is going on. And I think there is a limit to our ability to actually exercise effective control over such huge, complicated institutions.

That really needs to be taken serious.

Senator WARREN. OK. Good.

Dr. Thomson, did you want to add anything to that?

Mr. THOMSON. Yes. Along with the funding advantages that these institutions enjoy because, obviously, you do not have to pay as much for liabilities if people credibly believe that you will never be closed and have losses imposed on them.

There are all sorts of activities where massive size gives these banks an advantage over smaller ones. And I think that these advantages show up as cost efficiencies in studies of scale and scope economies in banks, where in fact, it is an artificial efficiency.

If you look at some of the things like lines of credit, standby letters of credit and all these sorts of things, customers take those from banks they think who can perform on them.

If you are a bank that is considered too big to fail, you are considered somebody who is a good credit, who will be able to perform on that contract going forward.

And, I think this aspect of systemic advantage is why studies pick up cost efficiencies in the largest institutions.

I do not believe in the credibility of economies of scale literature that find cost efficiencies above the $250 billion mark.

Senator WARREN. OK. Anything you want to add to that, Dr. DeYoung, on the efficiency point.

Mr. DEYOUNG. Yeah, on the efficiency part.

Senator WARREN. I promise we are coming to the third one.

Mr. DEYOUNG. On the efficiency, yeah, scale economies. We do not have any idea whether there are scale economies of large banks.

I published—I am editor of the *Journal of Money, Credit and Banking*. Two of the most recent three important scale economy studies have been published in my journal. The most recent—and all three of those—all three of these important studies find different results. All right.

So we do not know. No disparagements toward the researchers; these are incredibly different things to be trying to estimate.

I will point out that the most recent of the three papers does adjust, or attempts to adjust for, the financial advantages that too-big-to-fail banks have, as James has mentioned.

Senator WARREN. Yes.

Mr. DEYOUNG. Puts those into the cost functions that they are estimating. And when they control for the too-big-to-fail advantage, the scale economies go away.

So this is one out of three studies. We cannot draw any firm conclusions on this, but it does suggest that—and this is to the point earlier—large banks are more risky; however, they have lower costs of financing due to too-big-to-fail, and this gives them a different set of profitable opportunities to chase.

Senator WARREN. So I will tell you what; instead of asking the same question a fourth time, what I will do is I will now cut to the one that intersects the pieces.

And that is so we have the problem of the increased riskiness of the largest financial institutions, no evidence that they are more efficient, some evidence that what they are doing is taking advantage of the benefits of too-big-to-fail.

I want to hit the very last part of this, and that is the intersection of size with risk with cost.

And, that is if two banks have an equal chance of failure—let's set it up that way—is there anyone who thinks that the failure of a $2.5 trillion bank poses a smaller risk to the economy than the failure of a bank that is half that size or a quarter that size?

I want to see the intersection here.

Why don't I start with you, Dr. Kupiec, and we will come back down the other direction.

Mr. KUPIEC. No, I clearly think that size does create bigger spillover effects, and at the very largest institutions it would be a bad thing if one of those institutions fails. There is no—I think there is no doubt about that. Even under the best Title II Dodd-Frank thing we could come up with, it still would not be pretty.

But where this kicks in, in the size range, is, I think, a pretty difficult question to know. So, if a $250 billion bank is 10 times smaller and not doing the same activities as JPMorgan Chase, a $100 billion bank is not doing anything like that probably.

So, I mean, there is a big range here, and I think, for sure, the systemic risk is related to size. I have published papers that show that, using historical data from 1900s, before we had any safety nets. It is pretty clear that if you have a lot of little banks fail, you have got a problem. You have one big bank failing; you have got a problem if the little banks fail at the same time.

But where this line crosses, I cannot pick a number.

Senator WARREN. OK, cannot pick a number, but we are sure that the end is somehow different here—the furthest point out on it.

Mr. KUPIEC. I would agree with that.

Senator WARREN. Dr. DeYoung.

Mr. DEYOUNG. Yes, I agree with Paul; there is no way we can draw a brightline.

I will point out that some of these large banks were using the same business models as the large banks that became insolvent and came through the crisis with flying colors. In fact, some of them came through so well that we asked them to buy some of the large failed banks.

I would not draw any lessons and apply them to all banks. The best of all cases is we remove the too-big-to-fail subsidies and then let the market determine which bankers are good, smart bankers and which bankers are not.

Senator WARREN. Dr. Thomson.

Mr. THOMSON. Yes. I am in agreement with my two colleagues.

An element of this is not only would a large institution have a much bigger impact because it is just going to affect so many more markets and so many more activities, but there is also the aspect of anticipation.

We can imagine a $250 billion bank being taken down and failed. We cannot imagine this happening to a $2.4 trillion institution. And the expectations of what is going to happen and how that will be handled is important. If the failure is handled differently than the market expects it to be handled, as we saw with Lehman Brothers, that is going to create the dislocation.

Senator WARREN. Good point.

Dr. Herring.

Mr. HERRING. I agree with all three of the panelists.

Let me make one additional point about economics of scale, and that is that there are elements that clearly do have economies of scale. If technology is involved, we know that running larger batches of things is going to give you lower cost.

And what we need to figure out is a way for the whole industry to participate in those economies of scale rather than concentrating them in a single institution and tying up a systemically important function with the fate of one institution.

The other issue that is giving rise to economies of scale that is very worrisome about the current regulatory system is that the fixed costs of running a bank—having the systems in place, having compliance officers in place—is becoming a very large barrier to entry, and it is something that actually will make it more efficient to be larger.

Senator WARREN. Oh, yes, and again, talking about where we are on that continuum.

Mr. HERRING. Yeah.

Senator WARREN. But it is a very good point, Dr. Herring.

So, thank you. I appreciate it.

I think we have agreement that size matters, that it would not be smart just to limit the size of banks and sit back and say we have solved every problem, but that the combination of adding risk, of banks that are more complex, that there is a greater impact if they do fail—and I would add that they have more political power and that permits them to pull in additional subsidies—all matter, and that happens because they get big.

So we cannot win the battle against too-big-to-fail just by attempting to make banks safer. I think the battle for a safer banking system is also a battle over size.

Thank you.

Thank you, Mr. Chairman.

Chairman BROWN. Thank you, Senator Warren.

Dr. DeYoung, I think before you were able to get here Senator Warren spoke about the advantage of size, that competition is not so much price and the failure of the market there or the advantages they have, but the advantages in political power that you spoke of. And I think that was good insight.

I found your answers to the economies of scale issue pretty interesting, that Senator Warren brought up, even in contrast with the study, as one of you pointed out, by the new Cleveland Fed President. And I think your comments were pretty compelling.

I want to ask Dr. Thomson one question about that and then shift to something else.

You mentioned you are all familiar with IMF and Bloomberg and the estimates of 60–80 basis point advantage on the capital markets—$80 billion. You all, of course, are familiar with those studies and those contentions.

But, Dr. Thomson, you said it is much more, though, the advantages they have because of size are greater than just the capital market cost of capital. Could you expand on those for a couple of minutes?

Mr. THOMSON. Yes. I mean——

Chairman BROWN. Delineate as much as you can on that.

Mr. THOMSON. Yeah. So Dr. Herring mentioned one thing; compliance is much easier for large firms. If you have to add 1 person to a staff of 50, that is a much smaller cost than adding 1 person to a staff of 2.

There are a lot of contracts where the perception of being too big to fail gives a bank a competitive advantage.

There was some research that was done in the late 80s early 90s looking at whether loans made through lines of credit or loans extended through standby letters of credit or other types of guarantees, whether they were riskier or not. And what they were finding is they were not.

And what some of the research was finding was, in fact, that safer banks were the ones who were writing these types of contracts, they were the ones doing the business, and that this was a form of market discipline on them because customers do not buy contracts that require performance by somebody if they do not think you can perform.

Well, if you are too big to fail, if you are thought of as somebody who will never be closed, then I will feel safer entering into a contract with you than somebody else who I think there is a chance that next year when I need that credit that they will not be there to perform.

And so it is these types of aspects that are within the businesses of these institutions that give them an advantage that you will not pick up by just looking at a funding cost, but it gives them a fundamental advantage in the business because they have—they are competing with—a guarantee that other people do not have.

Chairman BROWN. And you think customers—is there evidence in studies that customers sense that, know that and act upon that?

Mr. HERRING. Yes. There are, in fact, services that advise corporations on banks they should establish a relationship with because those banks are more likely to be able to perform on the contracts. It is a very good point.

Chairman BROWN. Good. Well said. Thank you.

A housekeeping issue, I ask unanimous consent the following two documents be included in the record—a letter from the Clearing House Association, a statement from the Special Inspector General for the Troubled Asset Relief Program, SIGTARP.

Without objection, we will enter that in the record.

In a statement just submitted to the record—and this is a question I want to ask all of you—the Special Inspector General for TARP says that nine institutions that were given capital injections. The four largest banks, three large investment banks and two custodial banks "were chosen for their 'perceived' importance to the markets in the greater financial system."

The Government conducted stress tests after TARP but also announced that FDIC would guarantee the debt of all banks with at least $100 billion in assets.

And, according to the GAO, the Government offered banks with $50 billion or more financial support of around 10 to 11 percent of their assets; for banks with between $10 and $50 billion, the support percentage was about half of that amount.

So, two questions for each of you, and I will start with you, Mr. Kupiec:

Why were these decisions made in 2007 and '08; what do you think?

And how important are market perceptions, and what does the market expect today?

Mr. KUPIEC. Well, the TARP decisions were clearly made in a crisis mode, and they wanted to ensure or inject confident in the public on the largest institutions.

When it came to picking and choosing among the smaller institutions who got money in TARP, there was an application process. It went through review.

I am not particularly—I was not privileged to be involved in those discussions. So I do not know exactly, you know, why they got less money, but certainly the headline institutions were the first to take; they were taken care of.

Chairman BROWN. So, Dr. DeYoung, how important are market perceptions, and what does the market expect today?

Mr. DEYOUNG. Well, for the smaller banks, market perceptions are pretty much moot. There were many, many small banks who are not publicly traded that received TARP.

And the market perceptions—I mean, you are talking about financial markets, correct? This is your question?

Chairman BROWN. Yes.

Mr. DEYOUNG. Yes, financial markets are not important there.

I would say as long as the subsidies here were done in a transparent fashion there would be no uncertainty to investors, and therefore, I think that the pricing of the risk of these firms would be very efficient.

The minute these subsidies start to go—start to happen with some lack of transparency, then I think market perception becomes very important because then if there is any risk, any uncertainty, about whether a bank is being supported or not supported or the degree of their support I think the markets will discount the price or increase the risk of those institutions.

So I think your question depends on how transparent the process was, and with TARP it seems to have been relatively transparent.

Chairman BROWN. Dr. Thomson.

Mr. THOMSON. All right, so one comment on the TARP at the large side. Institutions at the top end, of course, were not given a choice. They were going to take the TARP money although we know two of them decided that they needed extra TARP money in the process. Again, that application process for the smaller institutions was a bit different.

I think whenever you, during a crisis period, signal that you are going to stand behind institutions without setting any type of thing in place that says this is it, this is the only time, you condition market expectations for those types of bailouts to become forthcoming the next time.

And this is a self-reinforcing process. The more markets believe, the greater the potential dislocation and the more you are going to tie the hands of the bank regulators and Congress to provide the subsidies to these institutions until you can put in place something credible that says, going forward, this is what is going to happen.

And then you have to be able to follow up and do it when that happens.

Otherwise, you are just going to perpetuate the very same sorts of risk-taking through the subsidies that is going to drive the next crisis.

Chairman BROWN. Dr. Herring.

Mr. HERRING. I very much agree with those points.

I think that the TARP episode is exactly what Dodd-Frank is trying to prevent and it is a very important point of market expectations.

I think probably the best example of that was the bailout of Bear Stearns which, unquestionably, made the Lehman Brothers crisis much greater. The markets expected that if Bear Stearns received a subsidy and it was half as complex, half as large as Lehman Brothers, Lehman Brothers surely would.

And when markets are disappointed in something that they have come to believe because of the behavior of officials over time, they react very badly. When people think the rules of the game have changed, they rush for quality. We saw that in markets with pressure bills from one point even going negative. And they tend to sit on the sidelines until they think they know the rules of the game again.

That means that if we want a new regime to work, we have got to be very consistent in applying it. Sadly, that probably means that we need a crisis of just the right size, something that will show these tools work, whether they be bankruptcy or the Title II authority, and work effectively so that people will have confidence that we have a new regime in place.

But I think, until then, there are going to be very troublesome questions about whether we, in fact, have the ability to do what we say we are going to do.

And the willingness, I think, has been a good point made before, too.

Chairman BROWN. Thank you.

Talk about FSOC and ask for your thoughts and recommendations about what they might consider.

Dodd-Frank authorized FSOC to make recommendations to the Fed regarding enhanced prudential standards and adjusting the applicability of those standards to different kinds and different sizes of institutions.

FSOC, for example, may set an asset threshold that is higher than $50 billion for the applicability of certain enhanced prudential standards under Section 165, such as resolution plans or concentration limits.

Should FSOC do that?

What would you recommend that FSOC do in making those judgments, Dr. Herring?

Mr. HERRING. I think this question is very much parallel to the question of identifying SIFIs. Just as we have said that size is not a magic number for a SIFI designation, I think it surely should have enhanced supervision as well.

That, of course, takes you into some uncomfortable judgmental grounds because you need multiple kinds of indicators and you

probably need some sort of judgment overlay. It should be transparent, but I think it would be a mistake to base it on size alone.

Chairman BROWN. Dr. Thomson.

Mr. THOMSON. Yes, I concur. I think we——

Chairman BROWN. We have kind of established that for all four of you on size.

So, speak elsewhere, what else that they should have. What else they should consider as they make suggestions, make statements, make rules?

Mr. THOMSON. Well, I think one of the things that we need is more information transparency, more granularity of information. One of the big things we see is concerns about transmission over payment systems or through common asset holdings or through derivatives markets.

We are starting to get more information collected on this. Some of it is an outgrowth or direct result of Dodd-Frank.

We do not collect all of the information we need, particularly for the institutions we think are systemically important. We do not collect the types of information at the level of detail—collecting such information from large institutions would not pose an undue burden on them, while it would for a small one—that would allow us to really see what these connections are.

Now, in Europe, we do see this information being collected, and we see this information being used to understand what the connections are, what the pressure points are and what the danger points are.

And I think until we start putting more information in place the process for labeling financial firms as systemic is going to be more judgmental than what I would be comfortable with.

Chairman BROWN. Dr. DeYoung, thoughts?

Mr. DEYOUNG. I will pass on this question. I will let Paul go.

Chairman BROWN. OK, Dr. Kupiec.

Mr. KUPIEC. The FSOC—it sounds like a good idea, and the section gives the FSOC the power to sort of designate a different set of criteria. But in the end the FSOC is not very transparent, and it is all judgment-based.

And the FSOC is dominated by bank regulators, by far and away, and it is not clear to me that the bank regulators would want to give up some of the smaller banks.

I think they very much like, according to Governor Tarullo's speeches, their stress-testing approach. They want to replace the capital requirements, in fact. Governor Tarullo is on record of saying he would like to replace Basel with stress test as the primary, and it is the primary tool right now in which the Fed determines capital.

But the whole system of designation by the FSOC—because there is really no hard and fast science about systemic risk, when does the failure of a firm cause financial instability?

Is it if it fails by itself in isolation during good times or if it fails by itself in isolation during not so good times, or is it when it fails with other firms at the same time and times are not good?

These are all different circumstances, and the law in no way speaks to what the situation needs to be for the FSOC to consider.

It is very vague and ambiguous, and it is entirely then left up to the judgment of the FSOC.

So I do agree that a $50 billion automatic designation for bank holding companies is way too low.

I also agree that I do not know the right number that that should be raised to, but I do not think turning it all over to the judgment of the FSOC, the way it operates today and without any real constraints and transparency, is something that I would recommend.

Once the FSOC determines that a company is systemically important, how does it get out of that?

It does not tell you when it designates it. The insurance companies that have been designated do not have a list of things they have to do to become undesignated.

There are property rights involved. When you are designated, all of a sudden you have to satisfy a whole bunch of rules. This slams profitability and shareholders, and pretty soon you have got Fed regulators crawling over you, you know, once a year. And you are an insurance company. You never had this before.

There are real issues associated with this decision, and yet, the firm that is getting evaluated does not have a whole lot of say.

They do not, for example, have to file an orderly Title I resolution plan to the FSOC before they get designated, where one of the criteria for designation is the fact that if they were to fail in bankruptcy it would cause a problem. Well, you do not even give them the right to file that report.

There is none of that that has been done in any of the designations.

So, right now, until we really tune up the FSOC designation process, and put some structure on it and some controls on it, I feel very uncomfortable in recommending that they get any additional powers, frankly.

Chairman BROWN. OK, understanding. Thank you.

Dr. Kupiec, understanding your reluctance, your concern about empowering FSOC further, I want you—I want all of you—to be more specific about sort of where we go.

And this panel has all said making this determination based on size alone, especially the size being $50 billion, does not make sense. It is costly. It is onerous. It is a burden on these banks that should not be there just by that criterion alone. I understand that.

We know a number of things.

We know banks above $50 billion have a whole different—as I mentioned in my opening statement, and Senator Toomey, and a number of us have, that banks above $50 billion have a whole different range of business models, some way less risky than others.

We know that banks with less than $100 billion, on average, hold just 6 percent of the assets of all the banks over that are SIFI-designated.

We know that the large—that the banks above $100 billion average less than 1 percent of the largest banks' over-the-counter derivatives.

They engage in just 1 percent of repo and security lending.

So we can see where the risk mostly is concentrated. It is, obviously, not in the smaller banks.

So my question—a series of questions on this:

Should regulators focus on particular business models or activities?

Should regulators think about physical commodities?

We did a couple of hearings in this Subcommittee on banks' ownership of everything from oil tankers to aluminum and electricity generation. Should contending—I think the conclusions in these hearings were, one, big banks have an advantage that in the real economy is perhaps unfair and that it brings more risk to the financial system, their involvement that way in the real economy, all those issues.

So, be as specific as you can, and I will start with you, Dr. Kupiec. And I think this probably will be the last question.

Mr. KUPIEC. OK.

Chairman BROWN. And one more thing, how specific you can be on what kinds of determinants we should make, we should use, whether it is FSOC or somebody else, as regulators.

Mr. KUPIEC. Looking at the practical side of things, that probably nobody is willing to open up Dodd-Frank very broadly at least and you want to make a few adjustments around the edges to make it better, if I had to propose something, I suppose I would still use a dollar cutoff as the simplest thing.

I would look—looking at the list of holding companies and recognizing what I think they do—and I have not analyzed every one of them in detail—the cutoff would be somewhere between today, to allow for growth, maybe $250 billion.

And I would add some requirements that they not be involved in any critical specialized activity, perhaps like, you know, asset custody—be a big asset custody manager or have too big a capital markets operation.

I do not think that is perfect, and I do not—and it is certainly not right in any scientific way. But if I had to come up with a specific solution, based on what I know today, I would not turn it over to a subjective assessment to the FSOC, bank by bank. I think there is no control there.

I would think, second best, I would be forced to stick with a dollar number and a few caveat criteria, and it would look something like that, I think.

Chairman BROWN. Dr. DeYoung.

Mr. DEYOUNG. Yeah, none of us are willing to commit to a number. I guess Paul came pretty close there.

Chairman BROWN. I would say he did.

Mr. DEYOUNG. He got pretty close. He actually said an integer.

Business models are important. You do not want to name a business model, but I will point to two places we should be looking.

Traditional banks originate and hold—originate loans and hold them. They do the financing of the loan. They underwrite the credit risk of the loan, and they bear the risk from the loan.

Other banks have a business model in which they originate the sell, they make some fees, and they get rid of the risk. They do not do any financing. And although they have underwritten the loan, you are not sure about how they have basically handed over the bond raters to tell investors how risky these credits are.

Most banks do a mixture of these two types of underwriting and financing. So that is one dimension.

Unfortunately, you would have to draw a line someplace—what percentage of your activities originate in hold; what percentage originate in sell? But the more originate and sell the bank does, the more systemic risk this is generating within the economy.

The other place to look is whether the bank is funding itself with deposits or funding itself with market finance.

And you know market finance. If you go down the list of firms that we look at as being particularly systemically crucial to what happened in the crisis, they all were funding their long-term assets with short-term market finance. So that would be the other place to look.

Now these are functions. These are not necessarily business models, but this is where I would look.

Chairman BROWN. Fair enough.

Dr. Thomson, before you answer this, you had said in, I believe, your opening testimony, maybe it was in response to a question, that we should—you acknowledge that $50 billion is probably too low a number, but you said perhaps if it is $50 billion and up you automatically review their other activities.

But if I heard you right, $50 billion would sort of be the trigger. Let's review the activities of every bank over $50 billion, not designate them SIFI—I am reading a bit into what you said—perhaps not designate them as SIFI unless they have other high-risk activities or high-risk activities.

Is that—do you want to——

Mr. THOMSON. Yes however, I do not think $50 billion is the right number. I would go higher, somewhere on the order of $250 billion for an automatic review, with the proviso that there are institutions that are under $250 billion we may also want to look at because of the nature of their activities.

But I think that setting a threshold for where you look and then apply some judgment is the answer—maybe that is where FSOC gets involved.

Chairman BROWN. So set a lower threshold, 50 or 100 for automatic review, but then look for the other, but at 250 it is automatic designation.

Mr. THOMSON. No, I would set a higher threshold, and I would set the higher threshold and have automatic review for designation above that dollar amount with, on a case-by-case basis, review of institutions below that dollar amount and maybe have a second threshold below which you just do not really look because I think there is little risk those institutions below a certain size are engaged in the activities that get larger institutions reviewed.

In your opening remarks, you talked about the traditional regional banks that are in Ohio, Pennsylvania, Illinois, and Indiana that do a very sort of classic, what you might call a Glass-Steagall type banking business. They lend. They provide trust services for customers. They raise most of their funding through their retail branch networks.

And that is a very, very different type of business than someone who is doing proprietary trading or a lot of trade on behalf of customers.

I think if you want to point to activities associated with systemic importance, I would look at activities that go beyond what we think of this traditional retail-focused banking model.

Chairman BROWN. Thank you.

Dr. Herring.

Mr. HERRING. I do think that this analysis should be very congruent with the analysis for designation of SIFIs.

And I think the Financial Stability Board has actually developed a reasonable analytical approach that weights size. It weights interconnectedness, which would include involvement in capital markets activities and commodities. It evaluates cross-border activity, complexity, the lack of substitutes for the services the firm funds and liquidity profile.

And all of these things are weighted. One can argue about the subjectivity of the weights, but it gives you something to start from.

Then I think if you are going to apply judgment, it should be very transparent. If you pick somebody up that is lower on this list and put it in, you should be very explicit about why you are doing it. If somebody on that list at a higher order is taken out, you should be very explicit about what you are doing.

I think that is the best we can do with our current state of knowledge.

Chairman BROWN. Thank you. Thank you all.

Some Members of the Subcommittee may send you written questions in the next few days. Please answer them as quickly as you can if that happens.

And thanks very much for your candor today and your good answers. The Subcommittee is adjourned.

[Whereupon, at 11:51 a.m., the hearing was adjourned.]

[Prepared statements and additional material supplied for the record follow:]

PREPARED STATEMENT OF RICHARD J. HERRING

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JULY 16, 2014

Chairman Brown, Ranking Member Toomey, and distinguished Members of this Subcommittee, I am grateful for the opportunity to address you today at this hearing entitled, "What Makes a Bank Systemically Important?"

I am Jacob Safra Professor of International Banking at the Wharton School, Co-director of the Wharton Financial Institutions Center, Cochair of the U.S. Financial Regulatory Subcommittee, Executive Director of the Financial Economists Roundtable, a member of the Systemic Risk Council and the FDIC Systemic Resolution Advisory Committee as well as the Hoover Institution Stanford Resolution Project. Although my views have certainly been influenced by discussions with my colleagues in these groups, the views I express today are my own.

The question of what makes a bank systemically important continues to divide experts. Some believe that recognition that some banks are systemically important will exacerbate moral hazard, leading to competitive inequities and the misallocation of resources. The concern is that institutions designated as systemically important benefit from implicit Government guarantees that will give them an unwarranted competitive advantage. This is a legitimate concern, but, of course, much of the Dodd-Frank Act aims to eliminate the category of too-big-to-fail institutions and extinguish the implicit guarantee. I think this is the correct approach, although disagreement continues about whether the goal has been accomplished.

Experience during the recent crisis indicates that the authorities are unlikely to refrain from bailouts if an institution which they regard as systemic encounters extreme financial stress. Thus I think it is pointless to deny that some institutions will be considered systemic. Rather we should aim to find ways to resolve them without creating intolerable spillovers for other institutions, financial markets and, most importantly, the real economy. If we succeed, it will end the implicit benefits banks derive from being regarded as systemic.

Since the crisis, officials have undertaken major efforts to identify the factors that make some institutions "systemic." The Financial Stability Board has developed criteria for making the designation based on several different indicators.[1] These indicators include the size of banks, their interconnectedness, their cross-jurisdictional activity, their complexity and the lack of readily available substitutes for the services they provide. Each November the FSB publishes a list of G–SIBs. Currently 29 institutions are designated as G–SIBs. These 29 banks accounts for the bulk of activity in equity and bond underwriting, loan syndication, derivatives, foreign exchange and custody. Eight of the G–SIBs are headquartered in the United States and they range in size from nearly $2.5 trillion to $222 million indicating that factors in addition to size matter.

Substantial efforts are underway to refine the indicators and to model the interactions among institutions that create systemic concerns. Although these efforts may help us better understand the interconnectedness of financial institutions and markets, I think that they focus on the wrong question. In practice, the authorities treat an institution as systemic if they fear that a loss to uninsured depositors and creditors would damage the financial system and the real economy. When faced with the prospect of a disorderly resolution, officials have too often improvised bailouts over frantic, sleepless weekends. If the authorities cannot make a credible commitment to abstain from bailouts, Systemically Important Banks (SIBs) will grow larger, more complex and more dangerous.

I believe that the authorities have granted bailouts so frequently because they lacked reliable resolution tools. They relied instead on a policy of constructive ambiguity, believing they could limit moral hazard by asserting that access to the safety net was uncertain. This policy seems naive and ineffectual. It can work only if market participants believe that bailouts will be random. But market participants do not believe that bailout policy is determined by a spin of a roulette wheel. They expect that the authorities will behave rationally and provide bailouts to institutions that are regarded as systemic.[2]

The Dodd-Frank Act can be viewed as a multipronged attempt to eliminate bailouts and neutralize the threat posed by SIBs. Many of these measures are designed

[1] The Financial Stability Oversight Council (FSOC) has refined these criteria and applied them to a broader range of financial institutions in the United States.

[2] This is, of course, a prime example of a time inconsistency problem: what the authorities say ex ante is quite different from what they can expect to do ex post.

to reduce the likelihood that institutions will fail. The most important of these is the imposition of higher, better quality capital requirements with differentially higher capital requirements for SIBs. This is a welcome reversal of the policy before the crisis of giving SIBs differentially lighter capital requirements. While strengthened capital requirements will ensure that SIBs have better shock absorbers, they cannot prevent failures—nor should they. Banks are in the business of taking risks and so long as they do so prudently they provide substantial benefits to the economy by intermediating between savers and investors, buying and selling risk and operating the payments system.

If banks cannot be made fail-safe, they must be made safe to fail. This requires resolution policies and procedures that will ensure that investors and creditors bear the cost of bank failures, not taxpayers. The Dodd-Frank Act addresses this problem in Titles I and II. This is a major enhancement of the regulatory framework. Before the Dodd-Frank Act, most institutions paid no attention to how they might be resolved in the event of severe financial distress or what measures they might take to minimize the damage to the financial system. Lehman Brothers illustrated the problem starkly. It entered bankruptcy with no preparation. Indeed, the managers were uncertain about how many legal entities the holding company controlled and employees were unclear about which legal entity they worked for.

Title I requires rapid resolution plans for all SIBs. These so-called living wills show how the SIB could be resolved under bankruptcy without causing damaging spillover effects on other institutions and financial markets. Living wills must include: (1) an executive summary with a strategic analysis describing the firm's plan for a rapid and orderly resolution (without, however, defining what period of time qualifies as "rapid"); (2) a description of how resolution planning is incorporated in the firm's corporate governance structure; (3) a description of the group's overall organizational structure that includes a hierarchical list of all material entities, as well as jurisdictional and ownership information and mapping of core business lines and critical operations into corporate entities; (4) a description of management information systems that support the covered company and its material entities, including a detailed inventory and description of key applications along with identification of the legal owner or licensor and related service level agreements; (5) a description of interconnections and interdependencies among a covered company and its material entities and the covered company's critical operations and core business lines along with a description of how service levels would be sustained during a material financial distress or insolvency; and (6) identification of supervisory authorities and regulators that oversee the covered company.

For the largest and most complicated banking groups that have thousands of subsidiaries, the third requirement has been onerous. It demands not only a mapping of lines of business into corporate entities, but also details regarding material entities, critical operations and core business that, at a minimum, describe types and amounts of liabilities. It also requires details about the booking of trading and derivatives activities, as well as an identification of major counterparties including descriptions of any interconnections or interdependencies among them. Finally, it requires that covered companies list all material trading, payment, clearing, and settlement systems in which they participate.

Most of these requirements can be seen as attempts to minimize the prospect of a Lehman Brothers-like disorderly bankruptcy by ensuring that both covered companies and regulators have thought through the end game in advance. Although this will not ensure an orderly resolution, it increases the likelihood that SIBs can be made safe to fail. Not only will the authorities have a more accurate view of the SIB and its interactions with the rest of the financial system, but also the process and costs of drawing up rapid resolution plans and responding to regulatory evaluations, may give institutions an incentive to reduce their complexity. Moreover, the authorities have the authority to compel a SIB to simplify its structure if it is not sufficiently responsive to regulatory reviews of its resolution plan over an extended period.

While the D–F Act generally supports greater market discipline, it does not address the issue of public disclosure of resolution plans. The FRB and FDIC, however, have required disclosure of a public section of the plan containing an executive summary that describes the business of the covered company including: "(i) the names of material entities; (ii) a description of core business lines; (iii) consolidated or segment financial information regarding assets, liabilities, capital, and major funding sources." This could have been an effective way of harnessing market discipline to support the simplification of SIBs, but unfortunately, the FRB and FDIC chose to permit institutions to limit their disclosures to publicly available information.

If the information is already publicly disclosed, it's not clear what value this disclosure requirement adds. This timid approach represents a significant lost opportunity. If the authorities had been serious about enhancing market discipline, they should have required disclosure of information that would enable potential creditors of the covered company to understand the statutory hierarchy of claims on the various entities in resolution, and precisely how the authorities propose to conduct a resolution. In the absence of such information, creditors cannot be expected to price claims efficiently. Moreover, some of the information in the first rounds of disclosures falls short of the more modest goal of helping the public understand the business of the covered company because it is difficult to reconcile with other publicly available information. [3]

Living wills must assume that resolution takes place under bankruptcy. But current bankruptcy procedures are not sufficiently swift and flexible to ensure an orderly resolution. [4] The Hoover Resolution Project has devoted considerable effort to developing a new proposal for a Chapter 14 to the Bankruptcy Code that would be able to deal with the special demands of complex financial institutions. See *http://www.hoover.org/sites/default/files/rp-14-july-9-tom-jackson.pdf* for a description of the proposal and an analysis of how it would improve current bankruptcy procedures. This is a particularly important initiative because bankruptcy is the default option under Title I of the Dodd-Frank Act.

At the same time, the FDIC has refined plans for implementing its stand-by authority to act as receiver under Title II of the Dodd-Frank Act. Although the FDIC has performed this role for banks of moderate size, it has never had to face the challenge of acting as receiver for a SIB. Indeed, before passage of the Dodd-Frank Act its authority was limited to the insured depository institution within the SIB holding company.

The FDIC has proposed to resolve SIBs by (1) placing the parent holding company under the control of FDIC as receiver and (2) transferring to a new "bridge" financial company most of the assets and secured liabilities, leaving behind much of the unsecured debt. Regardless of where the losses occurred in the SIB, only the holding company would be taken into bankruptcy. This approach has been termed a "single point of entry" (SPOE).

In principle, the new financial company would be strongly capitalized (after shedding a large amount of its prior debt), would have the capacity to recapitalize operating subsidiaries when necessary, and would have the confidence of other market participants. This would enable it to continue its critical operations in the financial system. Since the bankruptcy would be confined to the holding company, spillover effects should be avoided.

The success of both the Chapter 14 proposal and the SPOE strategy depend on three issues that remain unresolved. First is that the bridge company have all of the assets, rights and liabilities of the holding company that has entered bankruptcy. This is crucial for maintaining business as usual in the operating entities and would require overriding "ipso facto" clauses that permit contracts to be terminated based on a change of control, bankruptcy proceedings or a change in agency credit ratings. This is particularly a problem with regard to qualified financial contracts. Currently counterparties may liquidate, terminate, or accelerate qualified financial contracts of the debtor and offset or net them out. This can result in a sudden loss of liquidity and, potentially, the forced sale of illiquid assets in illiquid markets that might drive down prices and transmit the shock to other institutions holding the same asset. Qualified financial contracts should be transferred in their original form to the bridge company so long as the debtor and its subsidiaries continue to perform payment and delivery obligations.

Second, both approaches depend on cooperation from the relevant authorities in countries where the SIB has operations. Virtually all SIBs have substantial cross-border operations and so an orderly resolution depends on cooperation in the transfer of assets and contracts to the bridge. The FDIC has taken a leading role in trying to forge an international agreement regarding harmonization of resolution policies. It participates in crisis resolution groups that review resolution plans for GSIBs and it has published a paper with the Bank of England supporting the

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[3] For additional details, see Carmassi and Herring (2013) in Appendix 1 and The Systemic Risk Council Jetter (2013) re: "Improving the Public Disclosure of Large Complex Financial Institutions" in Appendix 2.

[4] The current bankruptcy process is thought to be too slow and cumbersome to deal with an institution that trades 24 hours a day, 7 days a week and must rely on the confidence of its counterparties and creditors to maintain its operations. Moreover, a series of amendments to the Bankruptcy Code has increasingly immunized counterparties in qualified financial contracts from major aspects of the bankruptcy process, especially the imposition of automatic stays.

SPOE. Nonetheless, agreements and understandings tend to unravel in a crisis and countries may try to ring-fence the assets they control. The recent crisis did not provide much evidence of cross-border cooperation in resolution.

Third, both approaches require that "sufficient" long-term unsecured debt be left behind in the bankrupt holding company to recapitalize the bridge company.[5] Although it is relatively easy to compute an amount of loss absorption capacity that would be sufficient under conventional stressful conditions, tail risks are crucial and inherently very difficult to measure.

I would like to conclude with a somewhat different point, however. I believe that how the long-term debt is structured can also be important. Long-term debt matters not only because of its ability to absorb loss, but also because it has the potential to incentivize banks to manage their risks more prudently and to issue new equity before they reach the brink of insolvency.

Charles Calomiris and I have argued that a properly designed contingent convertible debt (CoCo) requirement can provide strong incentives for the prompt recapitalization of banks after significant losses of equity or for the proactive raising of equity capital when risk increases.[6] Correspondingly, it can provide strong incentives for effective risk governance and help limit regulatory "forbearance," the tendency of supervisors to delay recognition of losses. We show that, to be effective, a large amount of CoCos (relative to common equity) should be required. CoCo conversion should be based on a market-value trigger that is defined by a moving average of a quasi-market-value-of-equity ratio. All CoCos should convert if conversion is triggered and the conversion ratio should be dilutive of preexisting shareholders. Unfortunately, this proposal has not received serious consideration in the U.S. because the Internal Revenue Service appears unlikely to permit interest paid on CoCos to be deducted in the computation of taxable income and so banks would prefer to issue conventional, long-term debt. In view of the enormous costs of a financial crisis and the potential for a properly structured CoCo to create incentives that would reduce the probability of a crisis, this tax policy should be reviewed.

Thank you for the opportunity to testify on this important topic.

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[5] In principle, if losses at a subsidiary exceed the long-term unsecured debt at the holding company, the additional loss could be imposed on creditors of the subsidiary. But, once the prospect of creditors bearing loss in subsidiary is introduced, subsidiaries may be subject to a run by creditors and counterparties.

[6] For additional details, see Appendix 3.

Living Wills and Cross-Border Resolution of Systemically Important Banks*

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Abstract

Purpose- To analyze if and how 'Living Wills' and public disclosure of such resolution plans contribute to market discipline and the effective resolution of too-big- and too-complex-to-fail banks.

Design/Methodology/Approach- The disorderly collapse of Lehman Brothers is analyzed as a contrast to the planned new system. Large, systemically important banks are now required to prepare resolution plans (living wills). In the US, parts of the living wills must be disclosed to the public. The public component is analyzed with respect to contribution to market discipline and effective resolution of banks considered too big and complex to fail.

Findings- The analysis of public disclosures of resolution plans shows that they are insufficient to facilitate market discipline and, in some instances, fail to enhance public understanding of the financial institution and its business. When coupled with the uncertainty over how an internationally active financial institution will be resolved, we conclude that these reforms will do little to reduce market expectations that some financial firms are simply too big or too complex to fail.

Originality/Value- The financial crisis led to sweeping reforms in national and international prudential regulation and supervision. Many of these regulatory innovations focused on one of the most notable gaps in regulatory arrangements -- the lack of a framework to resolve a large, complex international financial institution in a way that does not generate intolerable systemic spillovers and does not burden taxpayers. This paper focuses on the publicly disclosed sections of living wills and how they could be enhanced to achieve the new policy objectives.

Keywords- Living wills, Lehman Brothers, Resolution policy, Systemic risk, Prudential Regulation

Paper type-Research paper

JEL Classification: G01, G15, G18, G20, G21, G24, G28.

1. Introduction: the peculiar absence of resolution policy from the pre-crisis Basel agenda

Although international efforts to enhance the safety and soundness of the banking system date back to the mid-seventies, the focus has been on harmonizing international banking supervision (e.g., the Basel Concordat and successive efforts to delineate best practices in supervision) or on negotiating increasingly complex, risk-based prudential capital requirements (e.g., Basel I, II, and III). These efforts aimed to prevent banks from failing – without, however, considering what might need to be done if a bank should fail.

The inadequacy of these efforts can be seen in the record of failures from 1989 through 2009. Ranking the top 100 banks by assets each year and counting the number of this group that failed[1], the implied failure rate was 1.3% (Kuritzkes, 2010) -- a failure rate roughly equivalent to that of BB-rated corporate bonds. Worse still, the lack of an effective framework for unwinding the affairs of a large international financial institution meant that official interventions were usually improvised over sleepless weekends and often involved a substantial public subsidy to facilitate the merger of the faltering institution with another larger institution in a desperate and costly attempt to avert damaging spillovers.

This contributed to the rapid growth of increasingly large, ever more complex financial institutions. The outcome has been an expanding number of financial institutions that are each too large and/or too complicated to be resolved without jeopardizing financial stability.[2] Indeed, quite apart from these subsidized mergers, the absence of a credible

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[1] Failures were counted as direct bankruptcies, conservatorships, or substantial government interventions. They numbered 26 over these two decades.

[2] For example (Dudley, 2012), in the mid-1990s, the top five banks in the United States had total assets of $1 trillion or about 14% of GDP. By the end of 2007, the top five banks had assets of $6.8 trillion or 49% of GDP.

resolution mechanism has given banks an incentive to become bigger and more complex to benefit from an implicit subsidy (in the form of a lower cost of funds) based on the beliefs of creditors that they would be protected from loss in the event of trouble. This weakening of market discipline may also have led to increased risk taking by these institutions.

Nonetheless, resolution policy was simply absent from the international supervisory and regulatory agenda – until 2008. A series of hastily improvised rescues of large financial institutions preceded the failure of a relatively large investment bank despite the attempt by the authorities to devise a rescue package over a frantic weekend in mid-September 2008.[3]

We review in Section 2 how the Lehman Brothers cross border organization contributed to value destruction under existing bankruptcy laws in the US and abroad. Lessons and policy consequences from the Lehman Brothers collapse are discussed in Section 3. These consequences include the rise in policy makers' interest in living wills. The US policy with respect to living wills is described and discussed in Section 4. Thereafter in Section 5 we ask how informative the public portions of living wills are. We emphasize the ambiguity and divergence in banks' interpretation of 'material entities' in their disclosures. The lack of clarity with respect to the definition of a material entity undermines information value of the resolution plans. Section 6 concludes that much uncertainty remains with respect to resolution of large, complex international banking groups.

Similarly, in the mid-1990s, the top securities firms had total asset equal to about 9% of GDP. By the end of 2007, these had grown to $3.8 trillion, about 27% of GDP.

[3] The resolution process was much more orderly for smaller banks that were entirely subject to FDIC administrative procedures.

2. The Lehman Brothers collapse

When Lehman Brothers collapsed in September 2008 it was the 4th largest investment bank in the US, nearly twice as large and complex as Bear Stearns, which had agreed to a subsidized, shot-gun merger with JPMorgan Chase in March of 2008 when it was unable to meet calls for additional collateral. The Lehman Brothers group, with more than 25,000 employees, consisted of over 6,000 subsidiaries in more than 40 countries (Miller and Horwitz, 2013), many of which were subject to host country national regulation as well as supervision by the Securities and Exchange Commission.[4]

In 2006 Lehman made a deliberate decision to embark on an aggressive growth strategy and to take on greater risk by substantially increasing its leverage[5] and making concentrated bets on commercial real estate, leveraged lending and private-equity-like investments. These were far riskier than its usual line of business because rather than brokering risk, they were holding substantial amounts of risk on their balance sheet, financed largely by short-term repurchase agreements often amounting to hundreds of billions of dollars per day. In the words of one Lehman employee, they had shifted from the

[4] This is an unusually clear example of the law of unintended consequences. The EU threatened to force the large American investment banks to form holding companies in Europe if they did not submit to consolidated supervision by a competent authority. Although it had no prior experience, the SEC somehow convinced the EU that it was a competent supervisory authority and in 2004 the five largest investment banks became voluntary Consolidated Supervised Entities (CSEs) subject to Basel II-like capital regulation. When they measured their required capital under Basel-like rules that had been extended to the net capital computation for the broker-dealer, the five CSEs discovered that they had considerable excess regulatory capital and quickly increased their leverage, which was surely not what the EU intended. See Lo (2012, p.34) for an analysis of the regulatory change, emphasizing that before 2004, the holding companies of the broker/dealers had not been subject to any oversight or leverage constraint. Lo also raises doubts about the magnitude of the impact of the change in rules on leverage. Kwak (2012), however, notes that Lo's analysis fails to emphasize a key point: the SEC's intent was to permit the large broker/dealers to substitute mathematical models for traditional risk weights so that the net-capital calculation would "probably will be lower."

[5] Lehman's debt to equity ratios often exceeded 40:1, and during the middle of any reporting period might go up to 60:1 (Miller and Horwitz, 2013).

"moving business" to the "storage business" (Valukas, 2010). They had, in essence, taken on the risk profile of a commercial bank without the protection of the bank safety net. When the subprime crisis erupted, they saw it as an opportunity to double-down on their bets rather than a threat and consistently violated their declared risk appetite and risk limits to position themselves for a market rebound.[6]

Just after the acquisition of Bear Stearns by JPMorgan Chase, Lehman announced its first loss since going public in 1994. Nonetheless, it was able to raise $6 billion in new capital. Secretary of the Treasury Paulson, in a private communication to the CEO of Lehman, warned that this was not enough and that if Lehman were to announce a loss in the third quarter without having a buyer or a definitive survival plan in place, its existence was in jeopardy (Valukas, 2010, p. 5). Unfortunately, the Administration did not prepare a plan of action for such a contingency either.

Lehman Brothers did not succeed in finding a merger partner nor did the firm develop a survival plan. Instead it resorted to window dressing its public disclosures and regulatory filings by arbitraging accounting requirements[7] and it overstated its liquidity pool by including "comfort deposits" that it held with its clearing banks in order to continue clearing operations with them.[8] It is noteworthy that so many market participants expressed surprise when Lehman failed. It seems likely that the surprise was more due to the perception of an

[6] Lehman exceeded its risk limits by margins of 70% with regard to commercial real estate and 100% with regard to leveraged loans (Valukas, 2010, p. 50).

[7] Valukas (2010) gives a full account of the so-called 105 repo transactions that could be reported as sales rather than borrowings.

[8] By September 12, 2008, two days after reporting $41 billion in its liquidity pool, Lehman had less than $2 billion of readily monetizable assets (Valukas, 2010, p. 10).

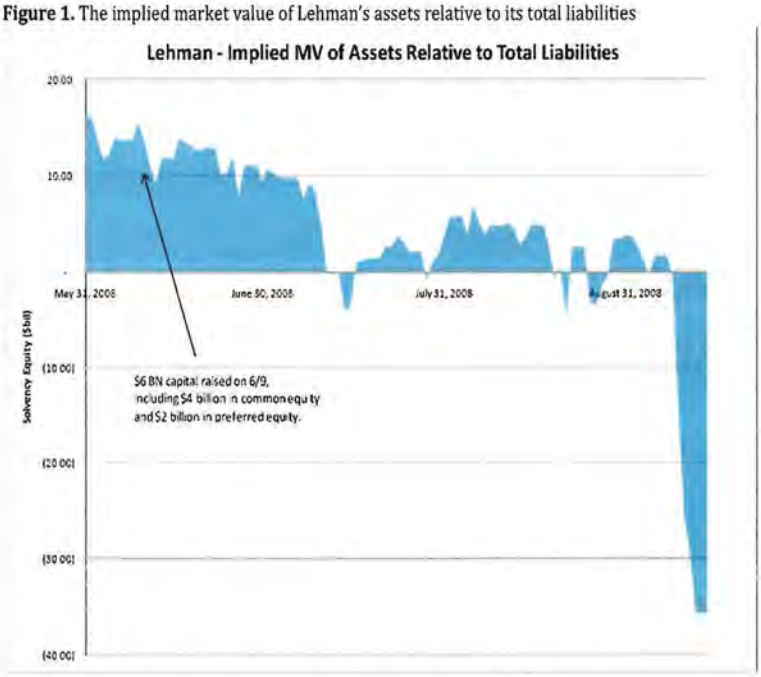
abrupt change in the US policy of providing support for any large financial institution rather than to confidence in Lehman's strength. Many market participants believed that if the authorities managed to find $29 billion to arrange a merger for Bear Stearns, an investment bank little more than half the size of Lehman, they should be willing to advance at least $60 billion for Lehman. Analysis of market prices indicates that many market participants knew that Lehman was insolvent and had been so at several times during the summer. Figure 1 below shows the implied market value of Lehman's assets relative to its total liabilities.

Nonetheless, the collapse seemed to catch officials and some market participants unawares. Over the weekend of September 12-14, 2008, US authorities met with CEOs of leading financial institutions from around the world to try to broker a merger or at least raise a fund to subsidize a merger for Lehman (much as they had accomplished for Long Term Capital Management in 1998). At one point on Sunday afternoon they believed they had struck a deal with Barclays Capital Management that would be subsidized by many of Barclays' competitors, but the Financial Services Authority in the UK refused to waive the requirement for shareholder approval. Thus with no buyer and (the authorities claimed) no way of funding a Lehman rescue[9], the head of the SEC encouraged Lehman's board to file for bankruptcy immediately, before it would be unable to meet its cash obligations when markets opened in Asia. On September 15, 2008, at 1:45 a.m. Lehman Brothers Holdings Inc. (LBHI) filed for protection under Chapter 11 of the Bankruptcy Act, becoming the largest bankruptcy in US history. The administrators of the Lehman bankruptcy in the US have

[9] The authorities claimed that they lacked legal authority to make a direct investment in Lehman and that Lehman's assets were insufficient to support a loan large enough to avoid collapse.

estimated that at least $75 billion have been wasted because of the complete lack of preparation for bankruptcy (Cairns, 2009).

Figure 1. The implied market value of Lehman's assets relative to its total liabilities



Source: Valukas (2010, p. 1580). The implied market value of assets is equal to the market value of equity plus the market value of its liabilities.

While the US authorities refused to support LBHI, they did support Lehman Brothers Inc. (LBI), the US broker-dealer subsidiary, for another five days until it could enter the Securities Investor Protection Act trusteeship on September 19. At this point its prime brokerage activities and a substantial portion of its clients' assets and obligations were sold

to Barclays Capital Inc. and others. This removed one of chief systemic concerns in the US. The other concern, Lehman's leading role in the opaque OTC derivatives market, turned out not to be a major problem. Most derivatives were closed-out and netted under ISDA Agreements. Although counterparties were not necessarily happy with the prices they received, no knock-on effects could be attributed to the unwinding of the derivatives book.[10]

The only domestic impact that could be labeled systemic was due to a "moral hazard" play by managers of the $62 billion Reserve Primary Fund, a wholesale money market fund that was forced to break the buck because of its outsized holdings of Lehman's commercial paper. News that one of the oldest money market mutual funds had broken the buck started a run on other money market mutual funds, which led to large sales of corporate commercial paper to meet the demand for cash withdrawals. The collapse of prices in the secondary market caused the primary market for commercial paper to shut down. Because commercial paper is the primary means of finance for much of corporate America, the Treasury hastily provided insurance for money market mutual funds. Later the Federal Deposit Insurance Corporation increased the deposit insurance ceiling for banks from $100,000 to $250,000 and provided an unlimited guarantee for all non-interest transactions accounts to reassure depositors and attempt to level the playing field between money market mutual funds and banks.

Still many observers interpreted this as a successful application of bankruptcy rules to a large, complex financial institution (Ayotte and Skeel, 2010). Apart from the

[10] It should be noted that this relatively benign result was unlikely to have happened if not for the substantial liquidity provided to the broker/dealer by the Federal Reserve while it was being prepared for a SIPC resolution.

unanticipated spillover to the wholesale money market and knock-on effect on the commercial paper market, the US had shown that the economy could get on perfectly well without Lehman Brothers.

This relatively orderly outcome contrasted with the chaos created abroad. The immediacy of the impact was largely due to the tight integration of the lines of business of the Lehman group. The operational structure bore little resemblance to its legal corporate structure. Like many other global firms Lehman managed substantially all of the cash resources centrally at the holding company. Since LBHI declared bankruptcy before cash could be swept out again to the subsidiaries, they found themselves suddenly illiquid and unable to continue operation. Uncoordinated bankruptcy proceedings were initiated in a variety of jurisdictions including Australia, Japan, Korea, and the United Kingdom. Ultimately, the LBHI chapter 11 case precipitated insolvency actions throughout the world and the appointment of receivers or administrators in over 80 insolvency proceedings.

Because London was Lehman's largest center of activity outside the United States, many of the most complex problems emerged there. The London subsidiaries, including Lehman Brothers International Europe, its largest broker-dealer in Europe, filed for bankruptcy and turned to PwC for administration. Because British law made no provision for debtor in possession financing, the administrators had to struggle to find money to keep minimal functions such as security, housekeeping, or the canteen going. PwC was confronted with forty-three thousand trades that were still "live" and would need to be negotiated with each individual counterparty.

The integration of the group was such that a trade performed in one affiliate could be booked in another, without the client necessarily being aware that the location of the asset

had shifted. Recordkeeping fell into disarray when LBHI filed for bankruptcy. At the time of filing, Lehman maintained a patchwork of over 2,600 software systems and applications, many of which were outdated or arcane. These systems were highly interdependent, but difficult to decipher and not well documented. Moreover, most systems to cover operating functions, trading, valuation, financial accounting and other data had been transferred to Barclays in the sale and Barclays had integrated its own proprietary and confidential data into some of the systems. Thus other Lehman affiliates experienced enormous difficulties even in determining what their balance sheets were and who owed what to whom.

Although arrangements were ultimately negotiated with Barclays for access to some essential information, the delay made it almost impossible to salvage much going-concern value out of the rest of the group (with the exception of the sale of the foreign equity business to Nomura). In London, where much of the prime brokerage business had shifted, it was permissible to mingle clients' funds with the firm's own funds and so several hedge funds suddenly became illiquid and faced close-out netting procedures that added further downward pressure on prices in some already illiquid markets.

The fragmented data system impeded the salvaging of going-concern value from the remainder of the Lehman group. Different parts of any particular line of business were lodged in different subsidiaries in various parts of the world with no way of reintegrating them even if they had been viable. Clearly, significant value was destroyed by the lack of cooperation in the unwinding of the Lehman group. The process (and costs) may continue for a decade.[11]

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[11] Desmos (2010) reported that the total fees paid to lawyers, administrators and other advisers in the Lehman bankruptcy through October 2010 totalled nearly $2 billion. At least 1,300 people have been working on the Lehman bankruptcy since it began. This, of course, was merely an interim report.

3. Lessons and policy consequences from the Lehman collapse

The Lehman collapse focused the attention of world leaders on the lack of preparedness of regulators and supervisors to manage financial crises. First, Lehman provided yet another example of the inadequacy of the Basel II capital ratios.[12] Although Lehman had not technically violated its capital requirements, the denominator failed to capture the risks to which Lehman was exposed and the numerator clearly was inadequate to absorb Lehman's losses and permit it to remain as a going concern.

Second, it showed the ineffectiveness of supervisors in constraining the risk-taking of a firm determined to take greater risks. Lehman violated its own internal risk constraints and it managed to engage in accounting arbitrage to overstate its balance sheet strength without detection. When warned by the Secretary of the Treasury, the senior most financial authority in the US government, to raise more capital or prepare a recovery plan, it simply ignored the warning. Lehman did not formulate a resolution plan, but, even more remarkably, neither did the regulatory authorities. This and the inadequacy of capital adequacy measures were indications that despite roughly thirty years of effort, the international supervisory authorities had failed to implement effective prudential measures.

Third, the Lehman collapse also highlighted the complete absence of any international attention to the resolution of internationally active financial institutions even though even a casual analysis of insolvencies of international institutions since the mid-

[12] Luckily, many of the world's largest banks had not yet made a full transition from Basel I to Basel II, so that when the crisis hit these banks had a somewhat greater ability to absorb losses than if they had been fully authorized to operate under the Basel II advanced internal models approach. See Carmassi and Micossi (2012) and Micossi (2013) for a detailed criticism about the Basel risk-weighted approach to bank capital rules and a proposal of a new regulatory framework based on a straight leverage ratio.

seventies foreshadowed all of the problems revealed in the Lehman collapse (see Herring, 2002).

Since neither Lehman nor the regulatory authorities had made any plans for the resolution of the group, the last-minute filing for bankruptcy was chaotic. Even though Lehman was active in at least 40 countries, this action was taken without consultation or cooperation with any foreign government. Moreover it demonstrated the first-mover advantage in seizing assets. In this case, the US gained control over all of Lehman's liquid assets because of the timing of the bankruptcy filing. Eighty uncoordinated insolvency proceedings quickly followed.

Fourth, the lack of congruence between Lehman's lines of business and its legal corporate structure made it virtually impossible to salvage going-concern value in most of the rest of the world. This problem was exacerbated by the fact that Lehman's management information systems for valuation, accounting, risk management and even the location of assets were centralized and quickly sold to Barclays Capital Management and this meant that other resolution authorities could gain access to vital information only with a substantial lag. In addition, Lehman had engaged in regulatory arbitrage to mingle clients' funds with the firm's own funds so that many clients were surprised to find themselves general creditors of the firm.

The disorderly collapse of Lehman Brothers focused international attention on the lack of a coherent framework for dealing with the insolvency of a financial institution with substantial international operations. The Group of Twenty (G20) heads of State met in Washington just after the Lehman bankruptcy. In the Communiqué issued after meeting, they agreed that as a matter of priority (White House, 2008, p. 6): "National and regional

authorities should review resolution regimes and bankruptcy laws in light of recent experience to ensure that they permit an orderly wind-down of large complex cross-border financial institutions." Thus the issue of cross-border resolution of large complex financial institutions rose from obscurity to a prominent place on the policy agenda.

At the same meeting the leaders of the G20 expanded the membership in the Financial Stability Forum (FSF) to include the members of the G20 and in the follow-up meeting in London in 2009 rechristened the FSF as the Financial Stability Board (FSB). This was the first international institutional innovation of the G20 since the crisis. The FSB was given broad responsibility to help implement the G20 recommendations on strengthening the safety and soundness of the international financial system. At the request of the G20 during their meeting in Seoul in November 2010, the FSB (2011) set out an agreement on "Key Attributes of Effective Resolution Regimes for Financial Institutions," which attempted to fill the obvious gap in the international prudential framework highlighted by the crisis.

The FSB identified eight essential features that should be part of an effective resolution regime for banks (FSB, 2011, p.3):

1. ensure continuity of systemically important financial services and payment, clearing and settlement functions;

2. allocate losses to firm owners and unsecured and uninsured creditors in a manner that respects the hierarchy of claims;

3. not rely on public solvency support and not create an expectation that such support will be available;

4. avoid unnecessary destruction of value, and therefore seek to minimize the overall costs of resolution in home and host jurisdictions and, where consistent with the other objectives, losses for creditors;

5. provide for speed and transparency and as much predictability as possible through legal and procedural clarity and advanced planning for orderly resolution;

6. provide a mandate in law for cooperation, information exchange and coordination domestically and with relevant foreign resolution authorities before and during a resolution;

7. ensure that non-viable firms can exit the market in an orderly way; and

8. be credible, and thereby enhance market discipline and provide incentives for market-based solutions.

Many of these features can be read as attempts to establish a new regime that would prevent another disorderly, Lehman-like bankruptcy. The emphasis is on planning, sharing of information, cross-border cooperation, the protection of systemically important functions and avoiding the unnecessary destruction of value. All of these goals will be difficult to achieve, especially because many of the G20 countries have not established special resolution regimes for complex, international financial institutions. Perhaps the greatest challenge, however, is to achieve credibility. The authorities tend to be judged by what they do, not what they say, and most of the interventions and resolutions that occurred during the crisis were too late to plan for an orderly liquidation or restructuring process, failed to allocate losses to unsecured and uninsured creditors, involved major commitments of public funds, and showed little evidence of substantial cross-border cooperation. None of these interventions could be described as speedy, transparent or predictable.

The effort to establish credibility, however, is not advanced by the vague way in which the FSB (2011, p.7) describes the point at which resolution should take place: "Resolution should be initiated when a firm is no longer viable or likely to be no longer viable, and has no reasonable prospect of becoming so." Although the clear intent is for the authorities to intervene before equity is wiped out, the clause "has no reasonable prospect of becoming so" can be very permissive. Given the demonstrated tendency of managers, accountants and supervisors to take an overly-optimistic view of a firm's prospects for recovery, this clause seems to provide scope for delaying intervention until long after a firm's equity has been destroyed, which will mean more or less business as usual in ad hoc resolution improvisations.

One of the most significant new requirements was that each jurisdiction ensure that every systemically important financial institution files a "robust" recovery and resolution plan. The resolution plan should include: 1) identification of financial and economic functions for which continuity is critical; 2) suitable resolution options to preserve those functions or wind them down in an orderly manner; 3) data describing the firm's business operations, structures, and systemically important functions; 4) potential barriers to effective resolution and actions to mitigate those barriers; 5) actions to protect insured depositors and ensure the rapid return of segregated client assets; 6) clear options or principles for the exit from the resolution process; and 7) assurance that key service level agreements can be maintained in crisis situation and in resolution, and that underlying contracts include a provision that prevents terminations triggered by recovery or resolution events and facilitates transfer of contracts to a bridge institution or a third party acquirer.

Although the *Key Attributes* proclaim the intent to enhance market discipline and to provide incentives for market-based solutions, no mention is made of public disclosure of recovery or resolution plans. How market discipline is to be enhanced is far from clear.

4. Resolution plans in the US response

At more or less the same time that the FSB *Key Attributes* were being negotiated the Dodd-Frank (D-F) reforms were being implemented in the US. [13] A key provision under Title I of the D-F Act requires that all large, systemically important financial companies submit resolution plans[14] to demonstrate how they would be resolved under the Bankruptcy Code. This is particularly noteworthy because the US has long had an administrative procedure for the FDIC to resolve a failing bank and, when appropriate, establish a bridge bank to continue systemically important functions. The *Key Attributes* advocate that other countries adopt a similar set of powers, but Congress wanted to make clear than an institution should not count on intervention from the FDIC. Although the FDIC would continue to resolve all insured depository institutions, it would manage the resolution of the group only under Title II of the D-F Act (Orderly Liquidation Authority). They emphasized this point by insisting, in Title I of the D-F Act, that groups prepare for a resolution under Chapter 11 of the Bankruptcy Code in their resolution plans.

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[13] See Appendix A for a summary of the EU proposal on bank recovery and resolution plans, contained in the directive harmonizing bank crisis resolution tools and procedures proposed by the European Commission in 2012 and currently under discussion.

[14] Although "resolution plan" is the official name for such documents, they are commonly referred to as a "living will" or, more sardonically, a "funeral plan." In the remainder of the text we will generally use the terms "resolution plans" and "living wills" interchangeably.

Section 165(d) of the D-F Act requires that each nonbank financial company supervised by the Federal Reserve Board (FRB) and each bank holding company with at least $50 billion in assets (which together are termed "covered companies") present a plan for rapid and orderly resolution to the FRB and the FDIC. Foreign banking groups with US operations must also comply with this requirement. The plan must include (US Congress, 2010): "(A) information regarding the manner and extent to which any insured depository institution affiliated with the company is adequately protected from risks arising from the activities of any nonbank subsidiaries; (B) full descriptions of the ownership structure, assets, liabilities, and contractual obligations of the company; (C) identification of the cross-guarantees tied to different securities, identification of major counterparties, and a process for determining to whom the collateral of the company is pledged." This resolution plan is to be accompanied by a credit exposure report.

The implementation details were left to the FRB and FDIC. They published the implementing regulation on November 1, 2011 (FDIC and FRB, 2011a), that emphasized living wills should indicate how the covered company can be sold, broken up, or wound down quickly and effectively without jeopardizing US financial stability.

Living wills must include: 1) an executive summary with a strategic analysis describing the firm's plan for a rapid and orderly resolution (without, however, defining what period of time qualifies as "rapid"); 2) a description of how resolution planning is incorporated in the firm's corporate governance structure; 3) a description of the group's overall organizational structure that includes a hierarchical list of all material entities, as well as jurisdictional and ownership information and mapping of core business lines and critical operations into corporate entities; 4) a description of management information

systems that support the covered company and its material entities, including a detailed inventory and description of key applications along with identification of the legal owner or licensor and related service level agreements; 5) a description of interconnections and interdependencies among a covered company and its material entities and the covered company's critical operations and core business lines along with a description of how service levels would be sustained during a material financial distress or insolvency; and 6) identification of supervisory authorities and regulators that oversee the covered company.

For the largest and most complicated banking groups that have thousands of subsidiaries, the third requirement has been onerous. It demands not only a mapping of lines of business into corporate entities, but also details regarding material entities, critical operations and core business that, at a minimum, describe types and amounts of liabilities. It also requires details about the booking of trading and derivatives activities, as well as an identification of major counterparties including descriptions of any interconnections or interdependencies among them. Finally, it requires that covered companies list all material trading, payment, clearing and settlement systems in which they participate.

Most of these requirements can be seen as attempts to minimize the prospect of a Lehman-Brothers-like disorderly bankruptcy by ensuring that both covered companies and regulators have thought through the end game in advance.

The compliance costs for both covered companies and the regulatory authorities have been very heavy.[15] Eleven firms submitted living wills in 2012. Several of the submissions

[15] The Advance Notice of Proposed Rulemaking (FDIC and FRB, 2011b) estimated that averaged over the 124 covered companies, the initial burden of compliance would be 12,400 hours. For the largest institutions, the number of hours required to comply with the regulation was surely a substantial multiple of this amount. The burden on the supervisory agencies to analyze and evaluate the data has undoubtedly been quite substantial as well.

were reported to be thousands of pages in length. Based on an early evaluation of these submissions, William Dudley, President of the Federal Reserve Bank of New York, concluded that "this initial exercise has confirmed that we are a long way from the desired situation in which large complex firms could be allowed to go bankrupt without major disruptions to the financial system and large costs to society. Significant changes in structure and organization will ultimately be required for this to be achieved."

While the D-F Act generally supports greater market discipline, it does not address the issue of public disclosure of resolution plans. The FRB and FDIC, however, have required disclosure of a public section of the plan containing an executive summary that describes the business of the covered company including: "(i) the names of material entities; (ii) a description of core business lines; (iii) consolidated or segment financial information regarding assets, liabilities, capital and major funding sources."

During the comment period following the Advance Notice of Proposed Rulemaking (ANPR), the FRB and FDIC received many expressions of concern from the industry regarding the possibility that details of the resolution plan might be made public through the Freedom of Information Act (FDIC and FRB, 2011a, p. 67326). The ANPR dealt with the issue by requiring that any covered company that desired confidential treatment of the information must file a request for confidential treatment under the general rules of the FRB and the FDIC (FDIC and FRB, 2011b, p. 22660). This was essentially an opt-out approach that left the institution with the burden of justifying whether some information should be confidential.

In the commentary preceding the final proposal, the FRB and FDIC (FDIC and FRB, 2011a, p. 67322) tried to ease these fears and added their own concern that "release of this

information would impede the quality and extent of information provided by covered companies and could significantly impact the efforts of the Board and the Corporation to encourage effective and orderly unwinding of the covered companies in a crisis." The upshot was a disclosure requirement observing that (FDIC and FRB, 2011a, p. 67332): "While information in the public section of a resolution plan should be sufficiently detailed to allow the public to understand the business of the covered company, such information can be high level in nature and based on publicly available information." In effect, this creates a safe harbor for an institution that does not wish to disclose any information that is not already publicly available.

If the information is already publicly disclosed, it's not clear what value this disclosure requirement adds. This timid approach represents a significant lost opportunity. If the authorities had been serious about enhancing market discipline, they should have required disclosure of information that would enable potential creditors of the covered company to understand the statutory hierarchy of claims on the various entities in resolution, and precisely how the authorities propose to conduct a resolution. In the absence of such information, creditors cannot be expected to price claims efficiently. Moreover, some of the information in the first round of disclosures falls short of the more modest goal of helping the public understand the business of the covered company because it is difficult to reconcile with other publicly available information. The next section summarizes and analyzes the data provided by the eleven banking groups that submitted resolution plans during 2012. The final section argues that the lack of agreement on how cross-border firms will be resolved casts a huge uncertainty over how an international insolvency would be dealt with.

5. How informative are public sections of living wills?

The eleven banking groups that submitted their living wills in 2012 include seven US institutions – Bank of America, Bank of New York Mellon, Citigroup, Goldman Sachs, JPMorgan Chase, Morgan Stanley, State Street Corporation – and four foreign banking groups - Barclays, Credit Suisse, Deutsche Banks, UBS.[16] In their implementing regulation, the FRB and FDIC specified the format that each resolution plan should follow. We focus on aspects of the public section of the living will that might have improved market discipline if they had been more rigorously specified and carefully implemented.[17]

A major weakness of the disclosure format is the vague way in which the authorities have defined material entities: "*material entity* means a subsidiary or foreign office of the covered company that is significant to the activities of a critical operation or core business line" (FDIC and FRB, 2011a, p. 67335). Critical operations, in turn, are defined as "those operations of the covered company, including associated services, functions and support, the failure or discontinuance of which, in the view of the covered company or as jointly directed by the Board and the Corporation, would pose a threat to the financial stability of the United States" (FDIC and FRB, 2011a, p. 67335). No specific asset or income threshold has been set for identifying material entities that may be either branches or subsidiaries.[18] This may be

[16] The resolution plans filed by foreign banking groups mainly focused on US operations and entities.

[17] We will not, for example, comment on the institution's responsibility to provide a high-level resolution plan because in most instances the information was so high-level as to be uninformative. In addition, we have sympathy with the reluctance of institutions to specify to whom they might sell various lines of business because the grounds for maintaining confidentiality about this sort of information seem self-evident on competitive grounds.

[18] Luciano and Wihlborg (2013) emphasize that the practical distinction between a subsidiary and a branch in cross-border banking is often quite blurred. Some countries oblige foreign branches to meet liquidity and capital requirements within the host country as if they were separately incorporated subsidiaries.

appropriate in cases in which a key entity that services the group, such as providers of information technology or risk management services, has been set up as a separate entity. In fact, such entities are material even though they have negligible income or balance sheets.

Although we have no way of identifying material entities that have negligible income statements or balance sheets, it is possible to check whether the material entities that the banking groups chose to list include all of the entities that have a balance sheet size exceeding the $50 billion threshold - the same threshold which at the consolidated level would require bank holding companies to file a resolution plan under the D-F Act. To determine whether entities that exceed the $50 billion threshold have been omitted, we have used Bankscope data from May 2013, data from SEC filings as of yearend 2011, Federal Reserve/National Information Center data as of June 2012, information available in the banks' annual reports and other information published on their websites.[19]

The results (see Figure 2) indicate that eight of the eleven banking groups did not identify a few large subsidiaries with assets greater than $50 billion as material entities. Figure 2 displays the number of material entities reported by each of the eleven banking groups and the number and name of subsidiaries with more than $50 billion that were not identified as material entities in the public section of the resolution plan. Most "missing" material entities are intermediate holding companies, but in the absence of additional information about where such holding companies sit in the legal organization structure of the group, it is impossible to tell whether such information might be redundant because all of the material entities that are subsidiaries of an holding company – or its parent holding

[19] See Appendix B for details regarding the statistical benchmarks.

company – have been reported. Of course, even if all of the main subsidiaries, or controlling entities, of the holding company are reported, information about an omitted holding company may be important as well, especially if it issues debt or makes guarantees to other affiliates.

Figure 2: Material entities in resolution plans

	Number of material entities reported in public section of 2012 resolution plan	Large majority-owned subsidiaries (total assets of at least US$ 50 bn)* not included in material entities list
Bank of America[1]	7	4 BAC North America Holding Company (US); BANA Holding Corporation (US); Merrill Lynch UK Holdings (UK); NB Holdings Corporation (US)[3]
Bank of New York Mellon	14	0
Barclays (US)[2]	6	0
Citigroup	17	7 Citicorp (US)[4]; Citigroup Financial Products Inc. (US); Citigroup Funding Inc. (US); Citigroup Global Markets Europe Limited (UK); Citigroup Global Markets Holdings Inc. (US); Citigroup Korea Inc. (KR); Citigroup Overseas Holdings GK (JP)
Credit Suisse	16	1 Credit Suisse Investments (UK) (UK)
Deutsche Bank (US)[2]	7	1 Taunus Corporation (US)[5]
Goldman Sachs	22	1 Goldman Sachs Group Holdings (U.K.) (UK)
JPMorgan Chase	25	2 CMC Holding Delaware Inc. (US); J.P. Morgan Equity Holdings, Inc. (US)[6]
Morgan Stanley	18	2 Morgan Stanley (the group holding company) (US)[7]; Morgan Stanley International Limited (UK)
State Street Corporation	11	0
UBS (US)[2]	11	1 UBS Americas Inc (US)

* As reported by the Bankscope database, as of May 2013; majority-ownership defined as a minimum ownership of 50.01% in each step of the ownership chain. [1] The bank acknowledges that the reported list of material entities is not exhaustive. [2] Only material entities relevant for US resolution are reported in the resolution plan. [3] The latest available consolidated financial data for BAC North America Holding Company, BANA Holding Corporation and NB Holdings Corporation date back to 2005 or 2006, with total assets well above $50 billion for all three entities. Unconsolidated data reported in Federal Reserve form FR Y-9LP (June 2012) confirm that all three companies are still well above the $50 billion threshold, even without taking into account consolidation. [4] No recent consolidated data are available for Citicorp, but its unconsolidated total assets are well above $50 billion. Citicorp is not among the material entities identified, but it is indicated as one of the three main management segments: it holds the core business segments of the group, Global Consumer Banking businesses and Institutional Clients Group. [5] Taunus Corporation is mentioned as the company controlling other material entities, but it is not separately indicated as a material entity. [6] The latest available consolidated financial data for CMC Holding Delaware Inc. and J.P. Morgan Equity Holdings, Inc. date back to 2005, with total assets above $50 billion for both entities. CMC Holding Delaware Inc. controls, among other subsidiaries, Chase Bank USA NA, a depository subsidiary with about $116 billion in total assets as of June 2012; and J.P. Morgan Equity Holdings, Inc. controls CMC Holding Delaware Inc.. On this ground, we have considered the two entities to be still above the $50 billion threshold. [7] The Morgan Stanley parent is repeatedly mentioned throughout the resolution plan, but it is not included in the list of material entities. Sources: elaborations on data of banks' 2012 resolution plans, banks' annual reports, Bankscope, Federal Reserve/National Information Center, Orbis database, SEC, SNL database.

The FDIC/FRB implementing rule requires that each group provide a hierarchical list of material entities. Oddly, these appear to have been omitted from the public section. No organization or corporate structure tree chart is provided,[20] much less information about the percentage of ownership in each subsidiary. Presumably, the confidential section of the plan contains such information, but no clear case has been made about why such information should be excluded from the public portion of the plan. With considerable effort some of this information can be gleaned from other public documents, but it is not readily available in a format that is easy to compare across institutions.

At least some of these "missing" material entities might be regarded as material. For example, both Bank of America and Citigroup have disclosed high level organizational structure trees on their websites. These are purported to include the material holding companies of each group, but some of these holding companies are not included in the public

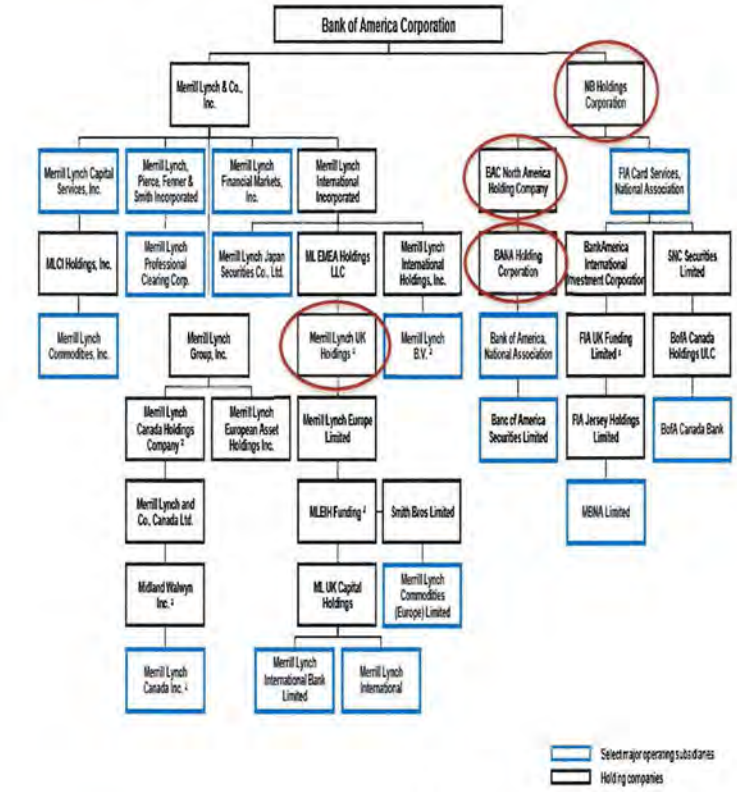
[20] With the partial exception of Morgan Stanley's submission for the depository institution (2012, p. 24).

sections of their resolution plans. In Figure 3.a and 3.b, we have circled the large subsidiaries (all holding companies) that are missing from the relevant public section of each living will.[21] In some cases it is clear from information outside the living wills that such entities could have important interactions with other affiliates in the group. For example, Citigroup Global Markets Holdings Inc. may have significant liabilities to affiliated depository institutions. [22]

[21] Three "missing" material entities of Citigroup are not displayed in Figure 3.b: Citigroup Funding Inc., Citigroup Korea Inc. and Citigroup Overseas Holdings GK. Citigroup Funding Inc. was merged into Citigroup Inc. and ceased to exist on December 31, 2012, which explains why it is not included in Figure 3.b, referred to January 2013.

[22] "Some of Citigroup's non-bank subsidiaries have credit facilities with Citigroup's subsidiary depository institutions, including Citibank, N.A. Borrowings under these facilities are secured in accordance with Section 23A of the Federal Reserve Act. Citigroup Global Markets Holdings Inc. (CGMHI) has borrowing agreements consisting of facilities that CGMHI has been advised are available, but where no contractual lending obligation exists. These arrangements are reviewed on an ongoing basis to ensure flexibility in meeting CGMHI's short-term requirements." (Citigroup, 2012a, p. 217).

Figure 3.a: The corporate structure of Bank of America*

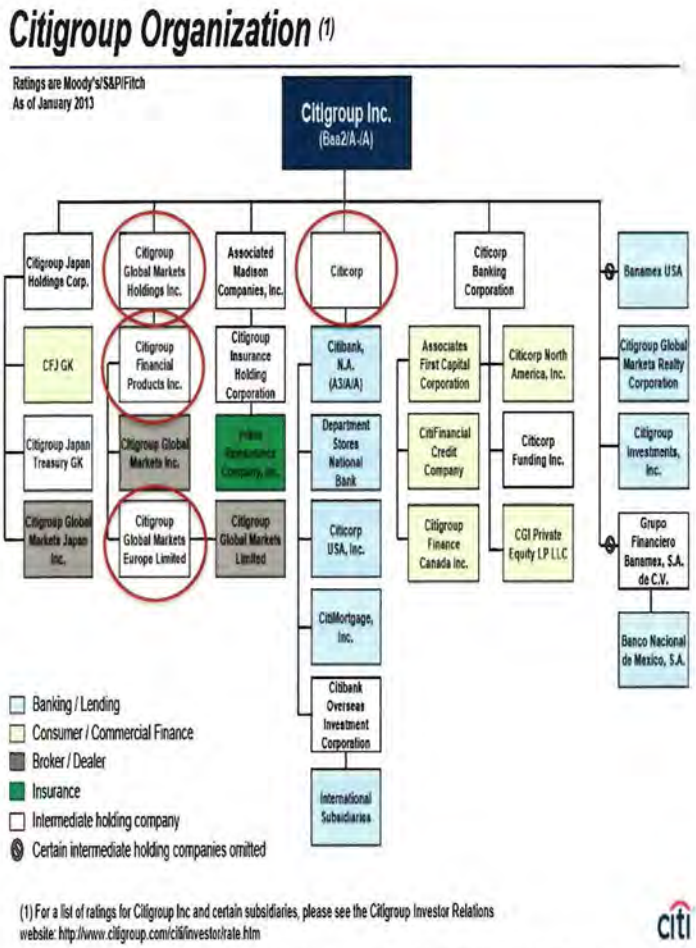


[1] This chart includes only select major operating subsidiaries and associated material holding companies of Bank of America Corporation. Not all subsidiaries of Bank of America are represented.
[2] Reflects a majority-owned subsidiary.

Bank of America

*Red circles indicate the large subsidiaries not included in the material entities list in the public section of Bank of America resolution plan submitted in 2012. Source: Bank of America website, own elaborations.

Figure 3.b: The corporate structure of Citigroup*



*Red circles indicate the large subsidiaries not included in the material entities list in the public section of Citigroup resolution plan submitted in 2012. Source: Citigroup website, own elaborations.

One can only speculate about why such entities are omitted from the public sections of living wills, but this does raise troubling questions about the criteria that have been employed to select the reported entities.

Surely investors would gain a better understanding of the groups' business and structure if they were required to provide detailed explanations about their decision criteria and an organizational chart including, at a minimum, the type of business, the legal form, the location, total assets and the percentages of ownership for each of the displayed entities. Without more quantitative and qualitative details on material entities and the methodology to select them, the public sections of the living wills are less informative than they should be. Moreover, it is difficult to imagine that a strong rationale could be advanced that this sort of information should be proprietary.

Although it is crucial to have better information about the reported material entities, the other entities that are implicitly deemed "non-material" should not be ignored altogether, if only because of their magnitude. For example, Citigroup listed seventeen material entities, but in fact it had 2,319 subsidiaries according to the Federal Reserve/National Information Center data as of June 30, 2012. While many of these subsidiaries may be irrelevant for understanding how an institution would be resolved, the living will should at least categorize these subsidiaries and explain why they are not relevant to the orderly resolution of the group.

More broadly, much of the other information contained in the public section of the living wills seems far more general than it should be if the objective is to enhance public understanding of the group's business or enhance market discipline. Figure 4 summarizes the information provided regarding the number of core business lines, the number of entities

with balance sheet or income statement data reported, the number of material payment, clearing and settlement systems in which the group participates and the number of supervisory authorities that oversee the firm.

In virtually every case, the lack of specificity in the "material entity" concept undermines the usefulness of the other information disclosed and the resulting differences across institutions can be very large. For example, the number of core lines of business varies from State Street Corporation, which lists 2, to JPMorgan Chase, which identifies 30. The average for the eleven institutions is eight. While business models across the eleven banking groups do differ significantly in many respects, one is left with the uncomfortable feeling that differing definitions of "core business lines" may also play a role.[23] Although the groups report basic information about the business conducted by each material entity, it is generally left to the reader to map lines of business into material entities and, even then, it is not clear how these might be preserved in the bankruptcy process.

Financial data about material entities are very sparse, usually including only the assets and liabilities (and sometimes income data) of the largest depository institution, which must disclose its balance sheets periodically in any event.[24] While this is consistent with the FRB/FDIC requirement, it leaves huge gaps in a reader's understanding of the material entities and how they operate.

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[23] The FDIC/FRB regulation defines core business lines as "those business lines, including associated operations, services, functions and support that, in the firm's view, upon failure would result in a material loss of revenue, profit, or franchise value" (FDIC and FRB, 2011a, p. 67334).

[24] Moreover, banking groups also have to submit to the FDIC a resolution plan for their depository institutions with at least $50 billion in total assets, as required by a January 2012 FDIC rule. In most cases this plan was incorporated in the same public document with the resolution plan for the banking group.

Figure 4: Overview of selected information provided by banking groups in the public portion of resolution plans

	Number of core business lines	Number of entities with individual balance sheet/income data reported	Number of material payment, clearing and settlement systems	Number of material supervisory authorities[2]
Bank of America	5	2 (depository institutions)	15	8
Bank of New York Mellon	4	1 (depository institution)	15	11
Barclays (US)[1]	4	2 (1 depository branch, 1 broker-dealer)	18	19
Citigroup	12	1 (depository institution)	16	10
Credit Suisse	11	0	11	**18**
Deutsche Bank (US)[1]	10	0	16	**10**
Goldman Sachs	4	1 (depository institution)[3]	19	45
JPMorgan Chase	30	2 (depository institutions)	18	11
Morgan Stanley	3	1 (depository institution)	19	**19**
State Street Corporation	2	0	10	**13**
UBS (US)[1]	7	0	n.a.	14

[1] Information largely related to US operations. [2] Bold indicates that the bank reports only supervisory authorities of material entities. We have included in our calculations only supervisors explicitly named. [3] Included in the resolution plan for the depository institution submitted as a separate document. Source: public section of banks' 2012 resolution plans.

The systemically important financial institutions were required to indicate the number of "material" payment, clearing and settlement systems in which they participate, as well as the number of "material" supervisors and regulators with whom they must interact. This information is often used as a proxy for the complexity and interconnectedness of a financial institution that are believed to be two aspects of systemic risk.

Clearly the groups have taken the materiality guideline quite rigorously in reporting these two dimensions of proxies for systemic risk. Citigroup is reported to be a participant in 550 clearing and settlements systems in another source (Herring, 2013). While many of these may not be material, it is crucial to understand what standard of "materiality" is being applied. Similarly, the largest number of material supervisory authorities, 45, is reported by Goldman Sachs, which is by no means the largest or most complicated group. Indeed, most of these groups are active in more than 45 countries and so it is difficult to infer what standard of materiality has been employed and what the information implies about the difficulty of resolving the firm.

In short, the FDIC/FRB regulation set up guidelines for the public section of living wills that permitted groups to avoid providing any new information even if it was critical to understanding how difficult it would be to resolve an institution. Our examination of the actual public sections of the reports indicates that most groups took full advantage of their discretion to maintain confidentiality of information that is crucial to understanding how easily they could be resolved without, in many cases, any plausible rationale for holding such details in confidence. Nonetheless, even if the groups had been more forthcoming with information, investors and creditors would still be unable to price claims efficiently because officials have not yet agreed on how to handle cross-border resolutions.

6. Why resolution policy remains uncertain

The crisis revealed the US lacked a coherent regime for resolving systemically important global financial institutions. In this it was not alone. The Basel Committee on Banking Supervision (2010) concluded that no country had a framework for adequately

addressing the problems that arise in the resolution of a purely domestic banking conglomerate, much less a cross-border or global systemically important institution.

The D-F reforms were intended to enhance the ability of the authorities to resolve a purely domestic institution. Since the new regime remains untested, it is too early to judge whether it is sufficient to resolve a large institution without cost to taxpayers and without threatening financial stability. The cross-border aspects of resolution policy remain a challenge and the obstacles are formidable.

A cross-border resolution is bound to involve multiple supervisory authorities with differing statutory powers and responsibilities. Some may be charged with taking financial stability into account, others may simply be responsible for taking whatever measures they can to protect the customers of the part of the group they oversee. In addition to these differences in objectives, bankruptcy and administrative processes differ markedly, as do the competencies and powers of individual supervisory and regulatory authorities. The sheer number of authorities whose actions must be coordinated is mindboggling. One moderately large foreign bank, not large enough to be included on the FSB list of Global Systemically Important Banks (G-SIBs), held a meeting of its key national and international regulators to discuss its resolution plan and was obliged to convene the meeting in a large hotel ballroom.

Since November 2010, the members of the FSB have been developing resolution strategies, operational resolution plans and firm-specific cross-border cooperation agreements that establish a process for cooperation and information sharing. In its April 2013 progress report, however, the FSB (2013, p. 1) concluded that "[P]rogress has been relatively slow both because the issue is complex and because in many jurisdictions the

powers necessary for implementing a preferred resolution strategy have not yet been provided."

This is particularly worrisome with regard to the European Union because it is home to a large number of G-SIBs and several of these institutions hold more assets outside their home country than within.

Figure 5: Large international banking groups with >50% of assets outside home country, yearend 2011

Banking groups	Total assets	World assets rank	Home country	Rest of region	Rest of world
	in US$ billion		as % of total assets	as % of total assets	as % of total assets
1. Deutsche Bank (Germany)	2,800	1	34%	32%	34%
2. HSBC (UK)	2,556	3	35%	11%	54%
3. BNP Paribas (France)	2,543	4	49%	34%	17%
4. Barclays (UK)	2,417	7	34%	27%	39%
5. Citigroup (US)	1,874	14	36%	21%	43%
6. Banco Santander (Spain)	1,619	17	27%	41%	32%
7. UBS (Switzerland)	1,508	19	36%	20%	44%
8. ING Bank (Netherlands)	1,244	23	40%	38%	22%
9. UniCredit (Italy)	1,199	24	42%	56%	2%
10. Credit Suisse Group (Switzerland)	1,115	25	21%	26%	53%
11. Nordea Group (Sweden)	927	27	21%	74%	5%
12. Standard Chartered (UK)	599	41	15%	4%	81%

Source: Schoenmaker (2013, p. 62).

Figure 5 lists 11 European banking groups and one US banking group (Citigroup) that have less than half of their assets in the home country. In order for the market to function

properly, it needs to understand not only living wills, but also what the authorities will do in a crisis. In the absence of firm, credible and binding cooperation agreements, it must remain a matter of speculation.

The problem is complicated by the fact that the authorities have not achieved a consensus on the appropriate model for cross-border resolution. Idealists favor a universalist approach in which insolvency laws are harmonized and an insolvent firm's assets are pooled in one proceeding and shared equitably across claimants without regard to where they reside or which part of the group they have dealt with. Cynics consider this approach to be the Esperanto of resolution policies and believe that no matter what officials say they will ring fence those parts of the failing institution that they can control in the end.

These extremes are reflected to some extent in two approaches that are widely discussed: a single point of entry strategy (SPE) and a multiple point of entry strategy (MPE). The Bank of England and the FDIC (2012) have developed a SPE strategy. This approach attempts to leapfrog the seemingly hopeless task of harmonizing national bankruptcy laws and resolution procedures by vesting resolution powers in a single resolution authority that is responsible for overseeing the top holding company or parent company in a G-SIB. The responsibility of the single resolution authority would be to ensure that the top level institution would be restructured in such a way that it would serve as a source of strength by recapitalizing subsidiaries and down-streaming liquidity as necessary. The hope is that this would finesse most cross-border problems by preserving the assets and operations of subsidiaries on a going concern basis.

This presumes that the top level entity will be required to be sufficiently well-capitalized to absorb losses throughout the group – and, indeed, that the group is structured

in such a way that there is a clear top-level entity. Of course, this can only work if the single resolution authority has access to sufficient resources to maintain the subsidiaries in the group while the restructuring of the top level institution takes place, which may be an issue in several countries that are host to institutions with liabilities that are a substantial multiple of domestic GDP. Moreover, in the case of the US it appears to assume that resolution will take place under the administrative procedures of Title II of the D-F Act rather than the bankruptcy resolution plans required in the livings wills.

This approach raises tricky issues in a scenario in which a foreign subsidiary is the major source of losses and should be liquidated. The authorities, of course, do not want to be in the position of propping up an institution that has no going-concern value. But once they admit the possibility that some foreign subsidiaries may not be protected, creditors have reason to be concerned about all of the foreign subsidiaries and it may not be possible to implement the resolution without creating unwanted spillovers as creditors engage in a flight to quality.

In addition to the hope that foreign authorities can be convinced to forbear and leave the resolution to the headquarters authority, the laws underlying many financial contracts will need to be changed or the single resolution authority will need to have the ability to impose a stay. Otherwise the initiation of resolution proceedings with regard to the top-level entity can be interpreted as an event of default that permits counterparties to terminate their financial contracts. This could destabilize markets and frustrate the attempt of the single resolution authority to ensure the continuity of operations.

A MPE strategy involves the application of resolution powers by multiple authorities to multiple parts of the group and the break-up of the group into separate parts along

national, regional or functional lines. Unless the multiple authorities have firm agreements about how to coordinate their actions and allocate losses, this approach amounts to ring fencing.[25] This approach is opposed by most G-SIBs because they believe it would reduce the efficiency with which they can allocate capital and liquidity within the group.

It is difficult to imagine both approaches operating simultaneously without causing enormous uncertainty -- not unlike the current situation. The key point, however, is that how the cross-border resolution will be conducted is a critical factor that must be taken into account in valuing the claims on any entity within the group. When this uncertainty is considered in conjunction with the meager public disclosures in living wills, market discipline cannot be expected to reinforce and support regulatory discipline.

Despite an enormous amount of effort, one must conclude that we do not yet have the framework to undertake the orderly resolution of a G-SIB. This means that these institutions are likely to enjoy an implicit subsidy that is completely unrelated to their efficiency or the quality of their services. Too-big-to-fail may be too-costly-to-continue, but a solution to the problem remains elusive.

[25] New Zealand has taken this position and attempted to apply it more rigorously than any other national authority. It has tried to ensure that even if the foreign parents of their four largest banks should fail, the New Zealand subsidiaries could continue to operate. See the contribution of David Mayes (2013) in this issue.

Appendix A

The EU approach to bank recovery and resolution plans

In the European Union, the European Commission presented in June 2012 a proposal for a directive on bank recovery and resolution, with the goal of introducing new bank crisis management and resolution tools to facilitate orderly resolution and avoid bailouts (European Commission, 2012). Negotiations with the European Parliament and the Council of the European Union to adopt the final legislation are still in progress (the most recent compromise has been reached at the end of June 2013, with a final approval expected by the end of 2013).

The directive aims to harmonize policy instruments and procedures to deal with banking crises across EU countries and to improve the ability to manage the crisis and failure of cross-border banks. The proposal included provisions on preparation and prevention, early intervention and resolution tools and powers. Preparation and prevention measures include the requirement for banking groups and individual institutions within a group to prepare recovery plans, and for authorities to draw up resolution plans for them. Colleges of resolution authorities are also introduced, in which home and host countries resolution authorities participate under the lead of the group (home) resolution authority; the European Banking Authority would participate too, facilitating joint actions and acting as binding mediator in case of need. Finally, the proposed directive also requires the creation of national resolution funds to bear the costs related to resolution procedures (e.g. provide capital for a bridge bank), but never to bail out banks: these funds would have to be financed to a large extent by risk-based fees paid ex-ante by banks.

The directive introduces a requirement for banking groups to prepare and submit a recovery plan to their consolidating supervisor, which will transmit it to resolution authorities. The plan should include measures for the stabilization of the group as a whole in case of distress, indicating also arrangements for intra-group financial support. The preparation and submission of the recovery plans shall have at least an annual frequency, and an updated version should be presented in case of changes to the legal or organizational structure of the institution, its business or its financial situation. The plans must include a wide range of information, including: a communication and disclosure plan outlining how the firm intends to manage any potentially negative market reactions; a range of capital and liquidity actions required to restore the institution's financial position; the identification of critical functions; a detailed description of the processes for determining the value and marketability of the core business lines, operations and assets of the institution; arrangements and measures to reduce risk and leverage, to restructure liabilities and business lines, to maintain the continuous functioning of the institution's operational processes, including infrastructure and IT services; preparatory arrangements to facilitate the sale of assets or business lines in a timeframe appropriate for the restoration of financial soundness.

Competent authorities, after consultation with relevant foreign authorities, must assess the effectiveness of the measures proposed in the recovery plan to rapidly restore viability without producing adverse effects on the financial system; the European Banking Authority will develop guidelines specifying minimum criteria to be followed for such assessment. If competent authorities are not satisfied with the plan, they may request the institution to revise the plan: if it fails to submit the revised plan or changes are not

considered satisfactory, then authorities may direct the institution to take corrective measures, such as a reduction of the risk profile of the bank, timely recapitalization, changes to the funding strategy or to the governance structures.

While banks are required to draw up recovery plans, resolution authorities are entrusted with the preparation of resolution plans, outlining the resolution measures that will be adopted if the bank is taken through resolution. Resolution authorities, however, may require the banks to assist them in the preparation and updating of the resolution plan, and their requests may concern, among other issues, the following information: a detailed description of the institution's organizational structure including a list of all legal entities; the identification of the direct holder and the percentage of voting and non-voting rights of each legal entity; the location, jurisdiction of incorporation, licensing and key management associated with each legal entity; a mapping of the institution's critical operations and core business lines by reference to legal entities; a detailed description of the components of the institution's and all its legal entities' liabilities, separating at a minimum by types and amounts of short term and long term debt, secured, unsecured and subordinated liabilities; a description of the off-balance sheet exposures of the institution and its legal entities, including a mapping to its critical operations and core business lines; the identification of the major or most critical counterparties of the institution as well as an analysis of the impact of the failure of major counterparties on the institution's financial situation; each payment, clearing or settlement system of which the institution is directly or indirectly a member, including a mapping to the institution's legal entities, critical operations and core business lines; an identification and mapping of the legal entities and the interconnections and

interdependencies among the different legal entities (e.g. capital, funding and liquidity arrangements, cross-guarantee arrangements).

As for recovery plans, resolution plans must be updated at least annually or in case of changes to the legal or organizational structure of the institution, its business or its financial position that might have an impact on the plan. The latter shall include a demonstration of how critical functions and core business lines could be legally and economically separated from other functions so as to ensure continuity upon the failure of the institution; a description of the processes for determining the value and marketability of the critical functions, core business lines and assets of the institution; an explanation by the resolution authority on how the resolution options could be financed without any extraordinary public financial support; a detailed description of the different resolution strategies that could be applied according to the different possible scenarios; a description of critical interdependencies; a description of essential operations and systems for maintaining the continuous functioning of the institution's operational processes.

If resolution authorities identify significant impediments to the resolvability of a group, they may require the institution to take measures in order to facilitate its resolvability. Such measures might include a reduction of complexity through changes to legal or operational structures in order to ensure that critical functions can be legally and economically separated from other functions; the drawing up of service agreements to cover the provision of critical functions; limits to maximum individual and aggregate exposures; imposition of reporting requirements; restrictions of activities and new business lines or products; requirement to issue additional convertible capital instruments.

Appendix B

Methodology for the identification of large subsidiaries not listed by banking groups as "material entities" in the public section of resolution plans

Figure 2 displays the number of material entities listed by the eleven banking groups[26] in the public portion of their resolution plans as well as the number, name and location of large subsidiaries which have not been included in the list of material entities. To identify these "missing" material entities we have first collected information on large subsidiaries provided by the Bankscope database (as of May 2013): we have chosen $ 50 billion of total assets as the size threshold to select large entities and selected all subsidiaries that Bankscope reported to have surpassed such threshold, based on the latest financial data indicated by Bankscope in the list of subsidiaries. To obtain the Bankscope list of subsidiaries we have used the 50% majority-ownership filter made available by the database: companies included in the list of subsidiaries are only those that the banking group owns with at least a 50.01% stake in every single piece of the ownership chain.

Second, we have excluded some large subsidiaries included by Bankscope but not active any longer (e.g. due to bankruptcy or merger): for this purpose, we have used information provided by Bankscope in other sections of their database and by the Orbis

[26] These groups were required to submit their resolution plans by July 1st, 2012 as their nonbank assets (US nonbank assets for foreign covered companies) were at least equal to $ 250 billion. A second group of banks, with total nonbank assets between $ 100 billion and $ 250 billion, had to submit their plans by July 1st, 2013; finally, covered companies with less than $100 billion in total nonbank assets must submit their plans by December 31st, 2013. BNP Paribas, HSBC, Royal Bank of Scotland and Wells Fargo submitted their plans in the second round and the public sections were released by regulators on July, 2nd, 2013. In our analysis we have focused on the resolution plans submitted in the first round in 2012.

database (which follows the same criteria and format of Bankscope but has a wider coverage with regard to details on subsidiaries).

Third, we have checked whether any large subsidiary included by Bankscope was not in the material entities list provided by banking groups in the resolution plan, finding a few "missing" entities for 8 out of the 11 banking groups of our sample.

Fourth, in order to double-check our results with official regulatory sources and to make sure that large subsidiaries identified by Bankscope as of May 2013 were existing at the time of submission of the resolution plans, we have verified whether the missing entities were included by banking groups in the list of subsidiaries displayed in the SEC 10-K form for US groups and in the SEC 20-F form for foreign groups; we used data for year-end 2011 as this is the most recent date before the submission of the resolution plans for which SEC data were available. For a couple of foreign banking groups we were not able to find the list of subsidiaries in the SEC 20-F form and performed the double-check with 2011 annual reports or other official documents published by the banks.

Moreover, we have performed this double check also with Federal Reserve data on banks' organization hierarchy made publicly available through the National Information Center database. Since these data can be retrieved for any point in time, we have used the end of June 2012 data, corresponding to the timing of submission of resolution plans.

Our missing entities were included in both the SEC and the Federal Reserve data, or in documents published by the banks (only in one case a subsidiary was included in the Fed data as of June 2012, but not in the SEC list as of yearend 2011, while being included in the SEC list for yearend 2010).

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The Systemic Risk Council

December 2, 2013

The Honorable Mary Jo White
Chair
Securities and Exchange Commission
100 F Street, N.E.
Washington, D.C. 20549

RE: Improving the Public Disclosure of Large Complex Financial Institutions

Dear Chair White:

The Systemic Risk Council (Council)[1] is writing to request that the SEC examine the level and quality of disclosures being provided by large complex financial institutions ("LCFIs") and take steps to strengthen that disclosure. While public companies are required to provide detailed information to their investors about their activities, risks and financial condition, current disclosures by LCFIs are too opaque and leave investors and markets at risk, undermining efficient capital allocation and contributing to "too big to fail" fears. While we understand that markets receive a significant *amount* of disclosure, the quality, clarity, and comparability of important risk and intra-organizational disclosure is lacking. The simple fact is that, in general, LCFIs are much less transparent than other large public corporations. Greater transparency from LCFIs would help investors better comprehend the risks and corporate structures of these entities, enabling them to make better investment decisions and hold senior executives and board members more accountable. It also has the potential to play an important role in helping investors, counterparties, policymakers and the public, assess whether these institutions can fail without taxpayer support: bringing back essential market discipline.

A number of investors and other commenters have noted that rigor and transparency of such disclosures has declined in recent decades, to the point that few such issuers in this category meet the full and fair requirements of the Securities Exchange Act of 1934 and related provisions of Regulation SK. Better, more targeted and comprehensible disclosures are necessary to significantly improve investors' and other users' ability to properly analyze and make well-informed investment decisions about these LCFIs' risks, exposures and the complexity of business lines, including their general and business line profitability.

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[1] Systemic Risk Council: The independent non-partisan Systemic Risk Council was formed by CFA Institute and the Pew Charitable Trusts to monitor and encourage regulatory reform of U.S. capital markets focused on systemic risk. The statements, documents and recommendations of the private sector, volunteer Council do not necessarily represent the views of the supporting organizations. The Council works collaboratively to seek agreement on all recommendations. This letter fairly reflects the consensus views of the Council, but does not bind individual members. www.systemriskcouncil.org.

The Commission should require at least, the same level and detail of disclosures from LCFIs as from other large corporate entities. Yet, the quality of the information LCFIs currently provide through public documents clearly lags non-financial corporate disclosure, particularly regarding operational complexity, risk management and exposure risks. What disclosures are made predominantly take the form of boilerplate statements, rather than clear, understandable descriptions of the LCFI's circumstances. We believe there is enormous room for more transparency and detailed information to be provided without compromising proprietary information. We also believe this information should be provided in a format that is easily accessible to all manner of users, including average investors.

In general, we are concerned that disclosure practices for LCFIs fail to meet the standards that non-financial companies have had to meet for the past decade. For example, banks have historically obfuscated the disclosure of challenging or difficult information by burying such information deep within boilerplate presentations; a practice we believe that should be examined and eliminated. By comparison, non-financial companies must adhere to financial reporting rules that adequately describe their operations and risks, while presentation of financial information in earnings releases must enable readers to distinguish between "spin" and reality. Important and relevant information that is highlighted early in corporate disclosure documents should be the goal, as is generally the case now with non-financial firms.

We believe disclosures providing clear, concise and plain language information about the following issues would enable investors to more accurately assess the condition and performance of banks and to hold these institutions accountable for poor decisions. Given their size, complexity and role within in the financial system, these institutions should have better and more thorough disclosure than other types of companies, not worse. For example, LCFI disclosures should include:

- Information about their organizational structure and cross-organizational risks in a format that can be easily compared across institutions. Firms should be required to provide a group corporate structure chart, map business lines into legal entities and disclose their cross-organizational profitability, risks, credit lines and guarantees;

- Information about LCFIs' unencumbered assets that might be available to pay creditor claims in the event of failure;

- Information about the manner in which LCFIs allocate capital and expenses when they calculate returns on investment for individual business lines;

- Holdings of assets such as debt securities and loans sorted by type and by option-adjusted duration, which would better enable investors to assess sensitivity of an institution's assets and liabilities to changes in interest rates;

- Discussions about market-making, hedging and proprietary trading activities to enable investors to understand the extent of those activities and distinguish them from more traditional banking activities;

- Improved disclosure about the institutions' derivatives activities and exposures (on a gross and netted basis), including the risks and interconnections that flow therefrom. Positions on a non-netted basis by type of derivatives instrument, volume of transactions on a yearly or other periodic basis, profits/losses from derivatives trading, number and nature of counterparties and other information probably should be disclosed, as should interest income and expenses related to derivatives activities to enable investors to determine the net interest margin on the basis of reported balance sheet items, as well as on the basis of consolidated assets and liabilities;

- Non-loan financial instruments by asset class, including fixed-income, currencies, commodities and derivatives, among others;

- Value-at-risk measures using consistent assumptions about parameters of the underlying distribution, segmented by asset class in a manner consistent with disclosures made about non-loan financial instruments – and detailed explanations of why and when such risk measures change;

- Stress test results under different economic and financial scenarios;

- All major reserve categories including, specifically, legal reserves based on the type of financial activity; model-based reserves related to trading activities; reserves for credit losses, and operational reserves; and

- The effect on executive compensation of a) annual financial performance, b) contingent liabilities such as deferred compensation, and c) diluted share counts. This information should be provided in sufficient detail to enable investors to understand how firms' compensation policies affect their earnings performance and incentives for risk-taking.

Much of this vital information is currently lacking from LCFI public disclosures.

We recognize that the SEC is working extremely hard to implement regulations resulting from the Dodd-Frank Act, in addition to the myriad of market structure and trading issues that demand immediate attention. As discussions continue about too-big-to fail institutions and their resolution, enhanced disclosure could significantly improve the quality of ongoing efforts to address this issue. We hope that the SEC will begin taking steps to address the shortcomings in LCFI disclosure. One step would be for the SEC to lead an interagency effort with other FSOC regulators to improve the public disclosures of these complex institutions. For instance, the SRC also strongly supports greater public disclosure of LCFI "living wills" required by Title 1 of Dodd-Frank which are subject to the jurisdiction of the Federal Reserve Board and FDIC.[2] The Commission might also consider hosting a roundtable with representatives from the other FSOC agencies and the Office of Financial Research to discuss these issues more fully. This approach worked well during the Commission's thorough consideration of the systemic risks created by money market mutual funds. Investors could also provide invaluable assistance in these efforts.

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[2] See Letter from the Systemic Risk Council to Ben Bernanke, Chairman, Federal Reserve Board and Martin Gruenberg, Chairman, Federal Deposit Insurance Corporation, Dec. 2, 2013. (Attached).

In addition, the boards of directors of these LCFIs play an essential role in sound governance. We believe boards, and particularly their Audit and Risk Committees, should play an enhanced role in the disclosure process and ensure that all public information is provided in a transparent manner. Even conscientious LCFI boards may not fully understand or appreciate the disclosure requirements applicable to banks and thus fail to exercise the guidance and oversight that is needed. In this regard, we encourage the SEC to provide greater guidance to boards of directors in ensuring full compliance with essential disclosure requirements.

As we reach a critical juncture in strengthening our financial system and addressing too-big-to-fail, regulators, investors and the marketplace all need a better understanding of LCFI operations on a number of levels that would allow a realistic exploration of restructuring and investor choices. SEC disclosure rules are a critical factor in the effort to strengthen our financial system.

Respectfully submitted,

The Systemic Risk Council

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In This Issue: **Executive Pay and Corporate Governance**

How to Design a Contingent Convertible Debt Requirement That Helps Solve Our Too-Big-to-Fail Problem

Charles W. Calomiris, Columbia University, and Richard J. Herring, University of Pennsylvania

How to Design a Contingent Convertible Debt Requirement That Helps Solve Our Too-Big-to-Fail Problem*

by Charles W. Calomiris, Columbia University, and Richard J. Herring, University of Pennsylvania

Although debates still rage over the causes of the financial crisis of 2007-09, one thing is clear: several of the world's largest financial institutions—including Fannie Mae, Freddie Mac, Citigroup, UBS, AIG, Bear Stearns, Lehman Brothers, and Merrill Lynch—had amassed huge and concentrated credit and liquidity risks stemming from subprime mortgages and other risky investments, but they maintained equity capital that was too small to absorb the losses that resulted from those investments. In other words, relative to their risks, their equity capital proved inadequate to insulate these firms—and many others—from insolvency when the risks materialized.[1] Internal bank risk management and external prudential regulation and supervision failed precisely because they did not compute risk correctly and require the appropriate amount of equity *relative to risk*. The regulatory failure was not that equity capital requirements were too low *per se*. After all, as of mid-2006, the ratio of the market value of Citigroup's equity to the market value of its assets was nearly twice that of Goldman Sachs; but it was Citigroup, not Goldman Sachs, whose losses produced insolvency. The difference occurred because Citigroup's risk exposures, including the off-balance sheet risks associated with its implicit obligation to clean up problems in its special purpose entities and special investment vehicles, were disproportionately larger than Goldman's.

Examples of failures to constrain risk within a firm's capacity to bear loss are not hard to find. Chief executive officers and boards appeared to lack either an effective framework or the willingness to apply the appropriate tools to measure risk correctly or to constrain aggregate risk-taking within prudent limits.[2] One recent study reported that banks that provided risk managers with greater compensation and standing within their organizations not only experienced smaller crisis-related losses, but had lower stock price volatility prior to the crisis. This finding suggests that top management decisions not to prioritize and empower risk management were an important contributor to the crisis.[3]

This defect can take many forms within a bank's risk management system. It can show up as overreliance on risk decisions taken at a low level in many product lines and trading desks, without consideration of how such exposures might interact under various macroeconomic conditions. Or it can take the form of a tendency to follow the herd in an attempt to grow revenues and market share rather than questioning the adequacy of capital to absorb risks inherent in particular strategies. Other sources of vulnerability include reluctance to question fundamental assumptions about basis risks and hedges, general disregard for the risk inherent in the centuries-old challenge of funding long-term assets with short-term liabilities, and neglect of liquidity risk more generally. And coming on top of all these common risk management failings are a handful of others: the well-known tendency of people inside large organizations to override limits when they conflict with revenue goals; the difficulty of tracking aggregate exposures over complex legal structures and product silos in any reasonable amount of time; and the failure to "risk-adjust" the price of internal transfers of funds and compensation more generally.

As a fairly direct consequence of these kinds of errors of risk management, the bonuses and compensation that many financial firms granted were real, but the profits used to justify those payments were not. Not only did stockholders suffer as a result of these errors, but taxpayers were ultimately obliged to bail out insolvent large institutions or face the possibility of significant spillover costs to the rest of the financial system.

Examples of these problems can be found in the bankruptcy of Lehman Brothers, the losses sustained by UBS and AIG, the collapse of Northern Rock, the forced merger of Bear Stearns, and the collapses of Indy-Mac, Washington Mutual, and Wachovia as well as the string of losses reported by Citibank, Merrill Lynch, and Bank of America. Studies of all of these experiences have questioned whether anyone,

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1. By "equity capital" we refer here and elsewhere in this article to the economic value of equity (which we later proxy with a moving average of the market value of equity) rather than the book value of equity.

2. See Coffee (2010) for the view that these apparent failures in corporate governance may in fact be the consequence of pressure from institutional shareholders for managers to take greater exposures to risk. To the extent that this view has merit, our proposal addresses it by creating substantial dilution risk for shareholders, including the CEO, who is also at risk of losing both his equity interest and his institution-specific human capital.

3. See Erkul and Yerramilli (2010).

including corporate board members, senior management, or supervisors, even comprehended their institutions' exposure to subprime mortgage risk.[4]

These widespread failures to maintain adequate capital and to exercise effective governance of risk are all the more remarkable because regulators and supervisors have been focusing on the problems of risk measurement and capital budgeting for more than two decades. Risk-based capital is precisely the measure the Basel Committee says it has been targeting all along when setting its minimum standards for capital. Obviously, despite broad agreement that risk-based capital was the key concept on which to focus prudential regulation of capital, both bank risk managers and supervisors failed to measure risk correctly and to require capital commensurate with that risk.

Why did the regulatory system perform so badly? The failure was not the result of a lack of attention to the challenge of defining risk. The Basel Accord on Minimum Capital Requirements has undergone numerous refinements since its initial publication in 1987, including a major amendment in 1996 to account for market risks and a complete renovation of risk measurement with the announcement of Basel II in 2004. Principles for enhancing governance of risk have been addressed in a series of supervisory studies.[5] Indeed, the Basel Committee report on "The Core Principles of Banking Supervision," published as far back as 1997, incorporates sound corporate governance of risk as a key principle.[6]

Prudential regulation failed to require financial institutions to maintain adequate capital for two main reasons. First, incentive problems distorted the measurement of risk; second, incentive problems discouraged the timely replacement of lost equity capital.

With respect to the first of these problems, the process for measuring risk—on which capital requirements are based—encourages the understatement of risk. Under existing rules, banks and rating agencies control the measurement of risk that is used by regulators. Bankers and rating agencies, however, suffer from conflicts of interest that provide incentives to understate risk. Banks that understate their risk enjoy lower capital requirements; and rating agencies that do so receive larger fees, which are allocated through a competitive process known as "ratings shopping." And this means that prudential regulatory authorities, given their reliance on banks' internal models of risk and on rating agency opinions, have no credible, independent information to serve as a basis for forcing banks to raise their internal assessments of risk.

When bank risk is not measured correctly, it cannot be managed properly. And since banks have a strong incentive to understate their risks, they may often fail to identify the magnitude of their exposures to risk. If they have not measured risks properly, they cannot take appropriate measures to penalize excessive risk-taking within their firms.

With respect to the second problem—the failure to replace lost capital in a timely fashion—it is instructive to consider how long it took Citigroup and other financial institutions to deplete their capital during the recent financial crisis. Many months passed between the initial financial shocks of the crisis—the first revelations of the spring of 2007, the August 2007 run on asset-backed commercial paper, the Bear Stearns bailout of March 2008—and the systemic collapse of mid-September 2008. During the year and a half leading up to this collapse, roughly $450 billion in capital was raised by global financial institutions. Clearly, global capital markets were open, and there were many willing investors, especially hedge funds and private equity funds, as well as wealthy individuals. But many of the financial institutions most deeply affected by the crisis prior to September 2008, despite persistent and significant declines in the market value of their equity relative to assets, chose not to raise sufficient capital.

A top executive at one of those banks confessed to one of us during the summer of 2008 that, despite the need to replace lost equity, the price of his bank's stock was "too low." He was concerned that issuing significant equity in the summer of 2008 would have resulted in substantial dilution of stockholders—including existing management. Institutions that had suffered large losses preferred to wait, hoping for an end to the crisis in the summer of 2008 and the elevation of the prices of risky assets that would accompany that market improvement. After the bailout of Bear Stearns, they also believed that if their situation deteriorated severely, the government would be likely to step in. That expectation further undermined any incentive to replace equity capital promptly, much less preemptively. On balance, the best strategy was to wait and hope for the best.

Of course, these two problems—*ex ante* risk mismeasurement and mismanagement and *ex post* failure to replace equity once it is lost—are related. If banks believed that they would be forced to replace lost capital in a timely fashion, they would have greater incentive to manage risk properly and to maintain adequate equity capital commensurate with that risk in the first place. Why? Because they would face the prospect of a significant cost (in the form of stockholder dilution) from having to replace lost equity capital in a troubled market.

If regulation failed because of distorted or inadequate incentives to measure and manage risk and gains from

4. For a study of the collapse of Lehman Brothers, see Valukas (2010). For an account of the losses sustained by UBS, see UBS (2008). For AIG, see Eisenbach (2009) and Special Inspector General for TARP (2009). For Northern Rock, see Kirkpatrick (2009). For Bear Stearns, see Kirkpatrick (2009) and SEC (2008). For Indy-Mac and Washington Mutual (WaMu), see Office of the Inspector General (2010) and Kelly (2008). For Wachovia, see Corston (2010). For Citibank, see Special Inspector General for TARP (2011). For Merrill Lynch and Bank of America, see SEC (2010).

5. See BCBS (1997); BCBS (1999a); BCBS (1999b); BCBS (2005); BCBS (2006); BCBS (2008); BCBS (2010a); BCBS (2010b); Joint Forum on Financial Conglomerates (1998); and Davies (2003).

6. BCBS (1997).

postponing the replacement of lost capital, then it follows that a central focus of reform should be to address those two incentive problems. How can we change bankers' incentives to improve the accuracy of their risk assessment, manage risk better, and replace lost equity capital faster?

In this article, we show how a properly designed *requirement* for convertible contingent capital (or "CoCos") can provide strong incentives for systemically important financial institutions (SIFIs) to make two critical changes: (1) implement strong systems of risk governance to measure and manage risk; and (2) raise additional capital or sell assets in a timely fashion, when necessary, to minimize the chance of violating minimum capital adequacy standards. In addition, our proposed requirement would supplement an institution's capacity to bear loss. Finally, a suitably designed CoCo requirement would supplement supervisory oversight with market discipline. Of course, other complementary reforms of prudential regulatory standards would also be desirable,[7] but we show that they are not substitutes for CoCos, which would play a unique and critically important role in improving incentives for risk management and the maintenance of adequate capital, especially for large, "too-big-to-fail" institutions.

Why Equity Capital Requirements Are Not Enough

Basel III has placed its main emphasis on requirements for more and better-quality capital and more intensive supervision. But do the increases in capital contemplated by the Basel Committee offer a solution to the two crucial problems of risk mismeasurement and failure to replace lost capital in a timely fashion? History does not provide much reason to be optimistic about the solutions proposed to either of these problems.

Although the emphasis on increasing shareholders' equity is a move in the right direction, these reforms will not solve the fundamental problems of accurate risk measurement and maintenance of adequate capital. The measure of shareholders' equity employed by Basel is an accounting measure that inevitably lags its true economic value, thus avoiding timely recognition of loss. The ability to avoid timely recognition of loss encourages banks to understate risk, since they will not be forced to raise dilutive equity in the wake of losses. And after unrecognized losses occur, banks' incentives for risk management can become even more distorted, since the temptation to "gamble for resurrection" can lead thinly capitalized banks to increase their risk exposure.

Why does the Basel approach to capital requirements produce errors and lags in the recognition of loss? The measure of shareholders' equity continues to rely on accounting principles that, while they vary from country to country, combine book values and "fair values" when measuring capital compliance.[8] This approach inevitably delays the recognition of losses and permits banks and supervisors—both of whom may perceive benefits from postponing the recognition of loss—to conceal losses in a number of ways.[9] Bankers can be very creative in their use of complex transactions to disguise losses. Supervisors face major challenges in detecting and preventing manipulation of book values through gains trading—for example, the common practice of recognizing capital gains on positions that are held at book value while deferring the recognition of losses. The bankruptcy of Lehman Brothers revealed another device to exaggerate capital adequacy measures—the so-called Repo 105 or 108 transactions, which disguised repos (a collateralized borrowing) as a removal of assets and thus a reduction in the size of the balance sheet.[10]

The agility of firms in devising strategies for regulatory and accounting arbitrage makes it unlikely that supervisors will ever be able to keep up. Effective regulation is a continual contest between those who are being regulated and their generally less well-paid and less well-informed supervisors. Even when regulators attempt to close a loophole, regulatees usually find another in only a matter of weeks.

Supervisors not only can be caught unaware of losses, they may also prefer not to recognize them for regulatory purposes. "Forbearance"—especially the ever-greening of loans to borrowers who would otherwise be delinquent, just enough to keep them current on their debt service payments—remains a constant challenge for supervisors, who often find themselves under substantial political pressure to delay bank loss recognition.

We emphasize that delayed recognition is not only a technical challenge. Supervisors are subject to substantial political pressure, and that pressure often leads them to prefer to forbear and "play for time" rather than enforce capital adequacy requirements. The purposeful delays by the U.S. authorities in the 1980s, and by the Japanese and Mexican authorities in the 1990s, are just the most visible examples of a widespread phenomenon that has been documented time and time again. Supervisors also may lack incentives to enforce the spirit of prudential rules because they are likely to be challenged in judicial or administrative proceedings or legislative hearings for any action that forces an institution to recognize losses, especially when there is some hope that losses will be reversed in time. Moreover, in some countries, supervisors have been held personally liable and subject to criminal penalty for such supervisory errors. That legal liability is often

7. See Calomiris (2011).

8. This, of course, creates problems in comparing capital adequacy across countries. For example, countries that follow international financial reporting standards take a much stricter view of netting off-balance sheet positions than does the U.S., which follows generally accepted accounting principles (GAAP), so that the leverage for the five major U.S. dealers in derivatives is substantially understated relative to that of their European peers.

9. For evidence of such understatements of loss during the recent crisis, see Huizinga and Laeven (2012).

10. Valukas (2010).

used to threaten supervisors against taking aggressive actions. The result of these measurement and incentive problems is that supervisory action is often delayed until losses become indisputable instead of when they actually occur.

Given these information and incentive problems that face supervisors, there is little reason to have confidence in new supervisory powers to bring about timely recognition of loss. For example, Britain's Financial Services Authority, which was widely regarded as one of the most effective, forward-looking supervisory authorities in the world, provided an especially egregious example with regard to its oversight of Northern Rock. Just weeks before the bank collapsed, supervisors authorized it to adopt the advanced internal measurements approach to risk weighting its mortgages, which reduced its required capital by 30% and permitted that amount to be paid out to shareholders.

Accounting loss recognition lags were substantial during the recent crisis. For example, Darrell Duffie notes that "Citibank, a SIFI that did receive a significant government bailout...had a Tier 1 capital ratio that never fell below 7% during the course of the financial crisis and was 11.8% at roughly its weakest moment in December 2008, when the stock-market capitalization of Citibank's holding company fell to around $20 billion, or about 1% of its total accounting assets."[11] Moreover, as we have seen, the thin layer of equity capital maintained by most financial institutions can be overwhelmed by sudden losses that occur in a crisis, especially if they respond by selling illiquid assets into thin markets.

The IMF has shown that all of the banks that required bailouts in the crisis reported higher-than-average levels of capital in the last period before the intervention.[12] Moreover, the recent crisis made clear that all three components of the regulatory capital adequacy ratio are fundamentally flawed: one, the measure of capital in the numerator did not reflect an institution's ability to absorb loss without going through some kind of resolution process; two, the risk adjustment of assets in the denominator did not reflect some of the most important risks that banks faced; and three, the minimum acceptable level of capital so reported was much too low.

The ease with which banks, especially SIFIs, can evade capital regulation and engage in regulatory arbitrage suggests a need for creating some form of reliable, incentive-based regulation that makes maximum use of available information (including market-based information) to force them to recognize and replace lost capital and to measure and control their risks more effectively. The current approach of understating risk *ex ante*, disguising loss *ex post*, and seeking to avoid dilutive equity issues when they are needed most leaves SIFIs with few options if that risky gamble does not pay off—apart from an appeal for a bailout accompanied by the implicit threat that their demise will cause chaos if they do not receive a bailout.

Of course, one could argue that making initial book equity capital requirements much higher would solve some of the incentive problems that distort risk measurement and risk management, even without providing effective incentives for the timely replacement of capital. Recently, several academic proposals for reform have called for significant increases in bank equity requirements. Clearly, if banks maintained, say, 50% of their financing in the form of book equity, then bank stockholders, rather than taxpayers, would almost certainly pay the full cost of any understated risks gone wrong. But would that approach encourage proper risk management by banks? Would it produce banking system outcomes consistent with the public interest?

We do not think so. First, a draconian increase in equity requirements would raise the costs of finance for banks. That increase in cost would translate into a contraction of banking activity—most importantly, bank lending. A recent paper argues that more equity finance might not substantially increase the funding cost of banks.[15] We do not agree. Equity is costlier to raise than debt for fundamental reasons associated with both information and managerial agency problems.

With respect to information problems, a seminal paper by Stewart Myers and Nicholas Majluf (1984) showed that there can be large "adverse selection" costs associated with raising external equity that result from information "asymmetries"—that is, the possibility of significant differences between management's and other insiders' views of a company's future earnings prospects, and what outside investors, and hence the market, are able to know.[16] Such adverse selection costs are reflected, first and foremost, in the significant negative average market reactions to the announcement of equity offerings.

Such costs are also reflected in the much higher underwriting costs paid by companies to issue equity rather than debt. These underwriting costs reflect the attempts by issuers to overcome asymmetric information problems during "road shows" in which their investment bankers meet with institutional investors to explain the issuers' motives for raising capital and attempt to allay any concerns they may have about the prospects of the issuer.[17] And consistent with this argument about the high information costs of equity, studies of bank "capital crunches"[18] provide clear evidence that shocks to bank equity capital have large contractionary effects on the supply of lending—presumably because it is more costly to replace lost equity than to reduce loans.[19]

To be sure, the negative signaling effects associated with equity offerings will tend to be mitigated if equity offerings

11. Duffie (2009)
12. IMF (2009)
13. Admati and others (2011)
14. Myers and Majluf (1984).
15. See Calomiris and Tsoutsoura (2011).

16. As assumed by Myers and Majluf (1984) Bernanke (1983), Bernanke and Lown (1991), Kashyap and Stein (1995 and 2000), Houston, James, and Marcus (1997), Peek and Rosengren (1997 and 2000), Campello (2002), Calomiris and Mason (2003), Calomiris and Wilson (2004), and Caballero and Goldberg (2009).

More on the Information and Agency Costs of New Equity

Companies with unused debt capacity and profitable uses for more capital but whose managers believe their shares are undervalued will generally issue debt rather than equity to avoid diluting the value of existing stockholders' claims. Conversely, companies whose managers think their companies are overvalued may be tempted to issue equity, even if they have no current profitable uses for the capital. But sophisticated investors understand these motives, as well as the tendency of managers (especially in mature industries) to waste excess capital on low-return investments. And such investors are accordingly skeptical about announcements of plans to raise outside equity, especially when companies have no clearly profitable uses for the capital. Recognizing their own informational disadvantage and managers' incentives to issue overpriced securities (or at least to avoid issuing undervalued ones), investors usually respond to announcements of new equity offerings by significantly reducing the value of the shares.[20]

are mandated by regulatory actions rather than chosen voluntarily. But the costs associated with such signaling effects will not be eliminated by a regulatory mandate. First, even if all banks went to the equity market at the same time to raise equity, banks whose managers know they are in better condition will have an incentive to spend more on underwriting to ensure that investors receive credible information of their superior condition. Those expenditures contribute to the costs of equity capital requirements. Second, there will still be differences among banks in the extent to which they choose to raise equity, which suggests that there will still be material signaling costs associated with announcing equity offerings. For example, some banks—particularly those with high-quality risky assets whose value might be very hard to reveal to outsiders—may well decide to avoid equity offerings and meet their higher equity ratios by selling some of their less opaque assets instead. For both of those reasons, higher equity capital requirements will not eliminate the information costs and attendant adverse selection risks that make equity offerings costly.

In addition to the information costs associated with raising equity, very high equity ratios are likely to have undesirable effects on managerial efficiency—effects that are well understood by investors, and almost certainly part of the explanation for their negative reaction to such offerings under many circumstances. Although a moderate increase in equity requirements can encourage better risk management by bankers, a dramatic increase could have the opposite effect. As Anil Kashyap, Raghuram Rajan, and Jeremy Stein argued in a 2008 paper, requiring banks to hold too much equity is likely to create significant agency problems by insulating bank managers from market pressures and blunting the urgency of their push for efficiencies.[17]

Whether the tax benefits of debt—stemming from the deductibility of interest in corporate taxation—should be included when measuring the relative *long-run* costs of equity finance has been hotly debated.[18] But even if tax savings matter only from a transitional perspective, banks that were permitted to raise capital in part through CoCos[19] would almost certainly choose to issue capital faster—and thus restrict loan growth less—during the transition to higher capital. And given the desirability of improving access to credit as one of the means of promoting economic recovery, transitional issues are far from trivial.

All of this is not to say that we oppose a significant increase in capital requirements. We believe that a significant increase is necessary. At the same time, however, we are convinced that there are negative—not just diminishing—social returns to achieving a higher amount of capital solely by raising equity capital requirements beyond a certain point. In our view, raising equity requirements on SIFIs to 9.5% of risk-weighted assets under the new Basel III requirements makes sense, and we could also see legitimate arguments for raising capital requirements even higher. But a draconian increase in equity capital requirements would not be desirable because the risk of default at SIFIs can be reduced in less costly ways. Moreover, we emphasize that the moderate increase in the required capital ratio under Basel III would not alone be sufficient to allay all concerns about the adequacy of capital to cover potential losses on assets, much less enough to ensure the adequacy of capital after a significant loss. That becomes especially clear when one recognizes the ability of financial institutions to target a higher level of risk that would more than compensate for any moderate rise in capital requirements.

17. Kashyap, Rajan, and Stein (2008).
18. See, for example, Admati and others (2011).
19. The CoCo that we propose is designed to be converted from debt to equity only in rare circumstances. Thus we would argue the tax authorities should permit the deduction of interest on CoCos, like interest on straight debt, for tax purposes.
20. By contrast, the average market reaction to new debt offerings, though also negative, is not significantly different from zero.

Furthermore, it is hard for regulators to determine the appropriate amount of capital for a bank, a task that is complicated by the reality that that amount changes over time with changes in risks. A given amount of equity, even if appropriate today, may not be the right amount tomorrow. Because a properly designed CoCo requirement creates incentives for banks to issue equity to maintain the right amount of capital—that is, equity plus CoCos—relative to risk, CoCos encourage not only timely replacement of lost capital and better management of risk, but also decisions to respond to increased risk with higher equity.

The limitations of equity capital requirements as a prudential device that we have just identified—problems of measuring and enforcing book capital requirements, the asymmetric information costs and managerial efficiency problems of excessive reliance on equity requirements, the manifestation of those costs in inadequate credit supply, the social costs of potentially inadequate capital, and the need to respond to losses and increases in risk through timely increases in capital—all of these considerations motivate our proposal for a contingent capital requirement. Our proposed contingent capital requirement retains debt finance as the dominant form of bank finance. Most importantly, it ensures that management would face strong incentives to manage risk, set capital appropriately, and replace any significant loss of equity capital with new equity capital offerings on a timely basis.

The case for CoCos over equity requirements alone can also be justified in terms of political economy and fair treatment of bank shareholders. Banks that currently benefit from the safety net will undoubtedly resist any increase in capital requirements because, thanks to implicit and explicit government protection of their liabilities, they already benefit from the lower borrowing costs they would otherwise expect to gain by raising more equity. When faced with a choice between issuing CoCos or equity, however, bankers should prefer CoCos. CoCos permit banks to continue to make use of the tax shield provided by the different treatment of interest and dividends in the tax codes of most countries.[21] But most important, the issuance of CoCos need not result in the significant loss of value to bank shareholders that a mandate to issue new equity almost certainly would inflict on them.

Design Choices of the Various CoCo Proposals

The essential idea of a CoCo has been widely discussed for a number of years by a number of banking and finance scholars. Despite numerous differences in design and specific intent, virtually all versions of CoCos have the common goal of establishing a contractual structure that increases bank capital in adverse states of the world. That can occur either directly through contractual convertibility or indirectly through incentives to raise new equity capital voluntarily. Recapitalization restores the bank to a viable position of capital adequacy and thereby avoids regulatory resolution.

The existing proposals can be characterized according to how they differ with regard to three critical features: (1) the amount of CoCos required to be issued as a percentage of the total book value of assets; (2) the trigger for conversion from bonds to equity; and (3) the conversion rate, or the amount of equity to be issued in exchange for CoCos when converted. The differences among proposals with respect to these three key design features (which are laid out in detail in the Appendix) reflect differences in the weights that the various CoCo proposals attach to the following three objectives:

1. providing a contingent cushion of common equity that results from the conversion of debt when the CoCo is triggered, which we label the "bail-in" objective;

2. providing a credible signal of default risk in the form of the observed yield spread on convertible debt prior to any conversion, which we call the "signaling" objective; and

3. providing strong incentives for the voluntary, preemptive, and timely issuance of equity (or rights offerings) as a means of avoiding highly dilutive CoCo conversion, which we call the "timely equity-issuance" objective.

The particulars of the design characteristics of our proposal reflect our view that the primary objective of a CoCo should be the timely issuance of equity objective. Our recommendations regarding the amount, the trigger, and conversion terms of CoCos all reflect our view that the central objective served by requiring CoCos should be to encourage the prompt voluntary issuance of equity in response to significant losses of equity by a SIFI. Rather than focusing on facilitating a more orderly liquidation of assets, as advocates of the bail-in objective propose, or on creating a convertible debt instrument that would credibly suffer substantial default risk via conversion and so provide useful, forward-looking prices embedding the perceived possibility of default, our proposal aims primarily to provide institutions with a strong incentive to strengthen risk management and take remedial measures to raise equity *well before* they face a substantial risk of insolvency.

As pointed out in a study by D'Souza and others (2009), the incentive to issue equity preemptively will be strong given the following three conditions: (1) the amount of CoCos to be converted is large relative to the book value of equity; (2) the trigger is credibly and observably based on market prices and

21. Albul, Jaffee, and Tchistyi (2010) suggest that a plausible way to limit the tax shield benefit from issuance of CoCos might be to permit a full deduction for "interest payments that correspond to the coupon on similar, straight bank debt, but to exclude any part of the [CoCo] coupon that represents compensation for the conversion risk. As McDonald (2010) notes, tax deductibility may have "political value" by virtue of eliminating a reason for banks to oppose contingent convertibles. Although CoCos are of value even without the tax shield, if banks are deprived of a tax benefit that is available to other institutions, some business is likely to migrate from the banking sector to the shadow banking sector, where it is more difficult to monitor and regulate. Of course, the first best solution to this problem would be to eliminate the asymmetry in the tax treatment of dividends and interest payments.

pegged to a high ratio of equity to assets (and thus conversion would take place well before serious concerns about insolvency arise); and (3) the conversion ratio is dilutive of existing common shareholders, creating a "sword of Damocles" that makes the prospective dilution from issuing preemptive equity appear desirable by comparison.[22] Under these conditions, a SIFI experiencing significant loss and approaching the point at which dilutive conversion would be triggered would choose to issue significant equity, possibly combined with asset sales, which would raise the market value of its outstanding equity relative to assets, thereby avoiding the conversion trigger.

To be effective for this purpose, the required amount of CoCos must be a significant percentage of total bank assets to make the threat of dilution from conversion a serious concern for bank managers and shareholders. And the dilutive conversion rate, in combination with the size of the CoCos being converted, must result in more dilution of common stockholders than the alternative preemptive stock offering. By a "dilutive" CoCo conversion, we mean a conversion that will leave the holders of CoCos with at least as much value in new equity as the principal of the bonds they surrender.

The study by D'Souza and others emphasizes that CoCos designed to result in substantial dilution upon conversion not only encourage banks to voluntarily raise preemptive equity capital to avoid CoCo conversion but also have another practical advantage as debt instruments. The strong incentives they provide management to avoid conversion are likely to make CoCos trade more like fixed-income instruments than ordinary convertibles. As a result, CoCos are likely to have greater appeal to institutional investors,[23] who tend to prefer low-risk debt instruments.[24] In the colorful words of Thomas Huertas, "To the common shareholder, contingent capital holds out the prospect of death by dilution, and it can be anticipated that shareholders would task management to undertake the necessary measures to avoid such dilution."[25]

Given the strong incentives embedded in our version of CoCos to promote timely equity offerings, we believe that our CoCos would almost never convert into equity. And as a consequence, they are likely to play little if any role in either "bail-ins" or in signaling CoCo holders' losses, which should be expected to be nearly zero. Of course, if a bank experienced a sudden and complete loss of market confidence (say, as the result of accounting fraud à la Enron or WorldCom), then the SIFI would probably be unable to avoid conversion through a preemptive equity offering. Although we value the ability of CoCos to absorb losses under such circumstances, our main interest is in creating very strong incentives for managers to take corrective action while they still have multiple options for doing so.

Not only would the corrective action of a preemptive stock issue or asset sale preserve high ratios of equity to assets in the wake of significant shocks, but the knowledge of the existence of CoCos and the anticipation of the possibility of facing dilutive CoCo conversion would create strong incentives for management to maintain high ratios of capital, accurate measures of risk, and effective controls on risk at SIFIs. CoCo conversion would be a CEO's nightmare: not only would existing stockholders diluted by the conversion be calling for his head, but he would also face an onslaught of sophisticated new block holders of stock—the institutional investors who formerly were CoCo holders—who would also likely be eager to sack senior management for its demonstrated incompetence.

The literature on CoCos has become vast in a short period of time, with numerous studies highlighting the potential value of requiring some form of contingent equity capital infusion for banks through conversion of existing debt, insurance contracts, or rights offering as buffers against loss.[26] The Dodd-Frank Act has mandated that the Federal Reserve study the scope for use of some minimum amount of contingent capital as part of regulatory capital requirements.[27] And a statement released by the Basel Committee (2011) sets out standards that CoCos must meet to qualify as tier 1 or tier 2 capital. The Swiss have specified a requirement for CoCos. In addition, the European Commission in 2011[28] proposed standards for debt "bail-ins" that are designed to avoid the use of taxpayer funds by requiring mandatory conversions of debt to equity. And several banks have begun issuing one or another version of them. Thus requiring a minimum amount of subordinated debt instruments that convert automatically into equity in adverse states of the world prior to reaching the regulatory insolvency intervention point has been endorsed by numerous regulators as a credible means of promoting market discipline.

In the past, financial economists and regulators have

22. This can be viewed as a reversal of the debt overhang problem, in which shareholders are reluctant to issue equity because most of the gains will go to creditors. Our approach provides incentives for shareholders to issue equity preemptively in order to avoid massive dilution.

23. Some insurance companies and bond mutual funds, which have been substantial holders of subordinated debt in the past, have protested that their regulators will not permit them to hold CoCos because they may convert to equity. But if the conversion occurs, the equity could be quickly sold and reinvested in bonds; therefore that does not seem to be an insuperable constraint.

24. D'Souza and others (2009) runs simulations to show that the strong incentives for CoCo issuers to avoid conversion would make conversions extremely rare; thus they would have yields quite close to those of traditional subordinated debt. During the Brookings-Harmura-Wharton Conference on Capital and Financial Markets, at which an earlier draft of this chapter was presented, Shigetoshi Kashiwagi reported on the results of a survey of more than 150 institutional investors around the world, which was conducted by Nomura. The survey was designed to gauge the appetite of institutional investors for contingent capital instruments. The survey showed that 74 percent of respondents were either "relatively comfortable" or "very comfortable" with their ability to value Credit Suisse Buffer Capital Notes (an early example of a CoCo). Of the 150 respondents, 45 percent had purchased Credit Suisse Buffer Capital Notes and 30 percent had purchased variables of CoCos issued by Lloyds Bank and Rabobank.

25. Huertas (2009), p. 5.

26. See, for example, Doherty and Harrington (1996), Flannery (2005), Kashyap and others (2008), D'Souza and others (2009), Huertas (2009), Duffie (2009), Pennacchi (2010), Pennacchi and others (2009), Bolton and Samama (2010), and Hart and Zingales (2010). For a review of this literature, see Murphy and Wallison (2011).

27. See section 172 (b)(2) of the Dodd-Frank Act.

28. European Commission (2011).

assumed that at least some measure of market discipline would be achieved by having banks issue traditional subordinated (or sub) debt that does not convert into equity.[29] But CoCos are superior to straight sub debt as a form of required capital from several perspectives. First, by making subordinated debt convert into equity *prior to* bank insolvency, CoCos eliminate the necessity of a politically charged decision about whether to impose losses on debt holders after intervention—something most regulators were reluctant to do in the recent crisis. Since CoCos will have already converted into equity, they will share in any losses suffered by equity holders, and so the issue of imposing loss is removed from consideration. CoCos, unlike straight subordinated debt, will offer greater credible protection for deposits against loss in adverse times.

Second, because CoCos would credibly remain in the bank and suffer losses in insolvency states, the prices of CoCos will accurately reflect their true risks. Given the widespread practice of bailing out subordinated debt during the crisis, sub debt can no longer serve this function.

Third, in the event that conversion is triggered, CoCos provide a better buffer against losses to depositors, counterparties, and senior debtors than subordinated debt because CoCos cease to accrue interest once they convert and therefore reduce liquidity pressures on the bank to some extent.

Fourth, and most importantly, if properly structured (as discussed above), CoCos will give incentives to boards and senior managers to replenish any significant losses of equity on a timely basis and also to strengthen controls over risk and corporate governance.

Of course, if an institution waits too long, or experiences a sudden, dramatic loss of market confidence (as in the Enron collapse), it may find that equity markets are closed to it or that it can sell assets only at distressed prices. That is why SIFIs are likely to launch new issues or sell assets long before they approach the CoCo conversion point, particularly if the CoCo trigger is set high enough so that this point is reached long before insolvency (when it may be too late to issue new shares).[30]

Setting an Appropriate Trigger and Related Issues

An appropriate trigger must be accurate, timely, and comprehensive in its valuation of the issuing firm.[31] What's more, it should be defined so that it can be implemented in a predictable way so that CoCo holders can price the risks inherent in the instrument at the time of its offering. The latter point has been emphasized by one rating agency that refused to rate a CoCo in which the conversion is contingent upon the decision of a regulator or of bank management.[32]

Some proposals for contingent capital assume that the book values of the institution's equity relative to its assets would be the appropriate conversion trigger for CoCos.[33] But as an accounting concept, book value is subject to manipulation and is inevitably a lagging indicator of deterioration of a bank's balance sheet.[34] And the problem with using book value as the trigger is not just one of managerial dishonesty.[35] As we saw earlier, regulators and supervisors have consistently shown a marked reluctance to opine negatively about SIFIs in a way that will become public. Such forbearance leads to protracted delays in recognizing problems. Thus, a principal rationale for requiring the issuance of CoCos is to reinforce official supervision with market discipline.

What market-based measures could be employed as the

29. A long tradition in the theory of capital regulation suggests that some form of credibly unprotected subordinated debt would be useful to include as part of a bank's capital requirement because of its role as a disciplinary device. The primary motivation behind the subordinated debt idea (Horvitz (1983), Gutentag and Herring (1987), Calomiris (1999); Shadow Financial Regulatory Committee (2000), Hunting (2004)) is that requiring a bank to issue a minimum amount of junior, unprotected debt, which would suffer first loss in the event of an insolvency, helps to publicize market perceptions of default risk. That could inform bank supervisors about the condition of a bank and make supervisors more likely to act rather than forbear from disciplining banks (since the signal is public). Junior debt yields are especially useful as indicators to policymakers since the FDIC is in a senior position relative to junior debt. Thus, observing the yields on junior, subordinated debt provides a helpful indicator of market perceptions of the risk borne by the FDIC. If supervisors can detect risk in a timely fashion, bank failures will be less likely because, first, banks will have to react to supervisors' concerns by limiting their risk and raising their equity capital once they suffer losses that increase their default risk on debt; second, banks that are unable to prevent continuing deterioration in their condition will be subject to credible prompt corrective action (PCA) to prevent them from becoming deeply insolvent. Indeed, the advocates of sub debt requirements therefore have traditionally seen a sub debt requirement as a complement to PCA. PCA envisions rule-based intervention by regulators (triggered by indicators of weakening bank condition) to require that banks increase capital and reduce risk prior to becoming insolvent. The problem in practice, however, is that intervention, which is triggered by book value ratios, typically has not been sufficiently prompt to permit any effective corrective action to be taken.

In response to the mandate within the Gramm-Leach-Bliley Act of 1999 that required the Federal Reserve and the Treasury to study the efficacy of a sub debt requirement, a Federal Reserve Board study reviewing and extending the empirical literature broadly concluded that sub debt could play a useful role as a signal of risk. Despite that conclusion, no action was taken to require a sub debt component in capital requirements; instead the Fed concluded that more research was needed. The development of the credit default swap (CDS) market and recent research showing that CDS yields contain important information about bank risk not otherwise available to supervisors (Segoviano and Goodhart (2009)) has added further to interest in finding ways to harness the information content of sub debt for regulatory purposes. Other observers, however, have noted that actual sub debt yields and CDS spreads were quite low during the financial boom of 2005-07, indicating that they would not have provided a timely signal of increased bank risk in 2006 and early 2007. On the other hand, advocates of sub debt requirements have noted that outstanding bank sub debt in 2006 and 2007 was not credibly unprotected, and in fact was bailed out during the crisis in most cases. Indeed, all of the subordinated debt of Fannie Mae and Freddie Mac was bailed out. In that sense, the failure of sub debt to signal problems could simply reflect correct expectations by market participants that the debts that they were holding were not effectively at risk.

30. One problem frequently noted by Charles Goodhart—which does not apply to our proposal—arises with CoCos that aim to achieve the bail-in objective. Bailing in debts via conversion when banks are near the insolvency point may make it harder for banks to raise funds as they near that low CoCo trigger. In other words, since bail-in CoCos are intended to give haircuts to debt holders, investors will not be keen to buy them when the prospect of a haircut is near. Under those conditions, equity issues also may not be feasible. Goodhart worries that bail-in CoCos, therefore, could be destabilizing for banks nearing financial distress and thus would either be counterproductive or not enforced. Our emphasis on CoCos with high triggers, which dilute stockholders in favor of debt holders, does not suffer from this problem.

31. D'Souza and others (2009).

32. This point may be an important constraint on sales of CoCos because some institutions that would be natural holders of CoCos are not permitted to hold unrated securities.

33. See D'Souza and others (2009) and Hart and Zingales (2010).

34. For example, the Japanese banking system was insolvent for almost a decade while still satisfying its minimum book value capital requirements under the Basel standards.

35. It may also involve the complicity of accounting firms in window-dressing transactions as shown in the Lehman Brothers case.

trigger? The two obvious candidates are credit default swap (CDS) spreads and stock price movements. CDS markets seem less desirable for the purpose of deriving triggers for two reasons. First, the markets are relatively shallow and thus may be more susceptible to manipulation. Second, the pricing of risk is not constant over time; an observed spread at one point in the business cycle under one set of market conditions can be indicative of a higher level of risk than the same spread observed at another time under a different set of business conditions.[36]

Equity values, if used properly, would provide the best source of information for designing a trigger. Indeed, some of the best-known cases of large-firm failures that surprised rating agencies and regulators were signaled well in advance by *severe and persistent declines in the aggregate market values of their equity*. For example, KMV's ratings of WorldCom's and Enron's debts were relatively successful in predicting their defaults. The reason for KMV's success was that their model is based on the Black-Scholes approach to measuring default risk as a function of two market-based variables: leverage (as measured using *market* values) and asset risk (which is also derived from the volatility of stock returns). Similarly, market value information about Lehman Brothers provided an early warning of its problems. One study, after evaluating the company's assets and liabilities on a market value basis, concluded that the substantial and protracted decline in Lehman's share price rendered it insolvent on several occasions during July and August 2008.[37] If Lehman had been required to issue CoCos with a trigger based on its market value of equity, this decline in Lehman's market value would have produced conversion of debt into equity long before insolvency.

As we have noted, the existence of a properly designed CoCo requirement would also provide all financial firms with strong incentives to voluntarily raise equity capital in large amounts before hitting the CoCo trigger. Lehman postponed a significant issuance of equity capital during the summer of 2008, in the hope that its share price would rise. If it had faced the prospect of CoCo conversion, it would almost certainly have issued new equity to avoid a much more dilutive conversion of CoCos. Provided the CoCos have face value that is a substantial proportion of the face value of equity, and that the conversion is triggered well above the point of insolvency—and at a rate that is at least sufficient to maintain the face value of the CoCos in terms of the market value of new equity—the voluntary issuance of equity above the trigger point is likely to be more favorable to shareholders than the conversion of CoCos, even under extreme assumptions about the potential decline in share prices in reaction to the announcement of an equity offering.[38] Bank managers who seek to maximize the value of shareholders' claims in the firm always have a strong incentive to prevent the triggering of the conversion of CoCos by strengthening the governance of risk and, if necessary, preemptively issuing equity into the market or selling assets, *as long as the dilution effect of the CoCo conversion is sufficiently large*. Even managers not intent on maximizing shareholder value *per se* will want to avoid the potential corporate governance consequences of a massive CoCo conversion, which would almost certainly produce a shareholder revolt that is led by preexisting shareholders who have been diluted and joined by former holders of CoCos who have become inadvertent shareholders. That might improve the market for corporate control, which is virtually dormant for most highly regulated institutions.

Of course, there is cause for concern that stock market prices may be unreliable measures of true value. Declining equity values are reliable only as rough measures of a SIFI's health if the declines are sufficiently large and persistent—and even in such cases, stock price declines offer only a rough indication of the actual extent of the deterioration of the firm's financial health.

Fortunately, that indication is good enough to serve as an effective trigger for CoCos. And with the aim of smoothing fluctuations in share prices and reducing the noise in market value signals, we suggest using a 90-day moving average of the ratio of the market value of equity to the sum of the market value of equity and the face value of debt. We refer to this ratio as the quasi-market-value-of-equity ratio, or QMVER.[39] Besides limiting the effects of share price fluctuations and noise, the use of such a ratio would also make it more difficult for speculators to force a CoCo conversion through a coordinated bear run on a bank's stock.[40] (See Figure 1 for an illustration of the smoothing effect of the 90-day moving average on the QMVER of Citigroup and JPMorgan Chase

36. See, for example, Bolton, Hoerova, and Le Duca (2010).

37. See Velukas (2010), which derived the market value of assets by adding the equity market capitalization and the market value of liabilities. The study then used the balance sheet identity to infer the market value of assets, which could be compared with the face value of Lehman's liabilities.

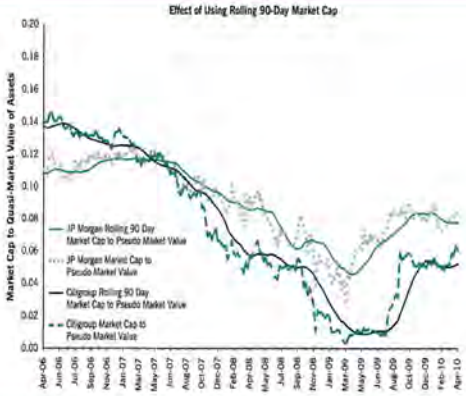
38. As demonstrated by D'Souza and others (2009).

39. Given the practical difficulties of pricing bank debt on an ongoing basis and the fact that in equilibrium, the structure of CoCos that we propose would result in little risk of conversion, we believe that it is not worthwhile to attempt to price bank debt when determining the denominator of the QMVER, hence our reliance on a "quasi" market-value-of-equity ratio rather than a true one. Because the market value and face value of debt are likely to remain reasonably close to one another (except in the case of major interest rate shocks), we do not regard this as an important deficiency. Furthermore, one can argue that using the face value of debt when setting a QMVER trigger is conservative, since it does not allow the ratio to rise as the result of decreases in the value of debt related to increased default risk.

In principle, liabilities could be adjusted for movements in the risk-free rate but not for movements in the risk premium. So long as monetary conditions are stable, however, that is a second-order refinement of a straightforward measure that would tend to undermine its transparency.

40. Albul, Jaffee, and Tchistyi (2010) find that holders of CoCos will have an incentive to manipulate the equity price only if the ratio of the equity conversion value to CoCo value is high enough to make the conversion profitable for the holders of CoCos. In contrast, bank equity holders have an incentive to manipulate equity prices only if the ratio of equity conversion value to CoCo value is low enough to make the forced conversion profitable for them. Note that if the trigger is a long moving average, the investor required to manipulate the share price over a sufficiently long period would be very substantial. Moreover, a sustained departure from the equilibrium price is likely to attract speculators who can profit from resisting the attempt to manipulate share prices.

Figure 1 The Smoothing Effect of a Ninety-Day Moving Average on the Quasi-Market-Value-of-Equity Ratio, April 2006–April 2010



Source: CRSP Database

during the period April 2006-April 2010.)

Would a trigger based on the QMVER be desirable based on the criteria of predictability, timeliness, comprehensiveness, and accuracy? Clearly, it is a comprehensive measure of firm value. (In fact, the market capitalization of a bank would be viewed by most economists as *the only* reliable comprehensive measure of value—one that includes, in principle, the value of tangible and intangible assets as well as off-balance sheet positions.)

Because the market values of the shares of SIFIs are continuously observable in broad, deep, resilient secondary markets—markets that continued to trade actively even during the depth of the financial crisis (when many other markets ceased to function)—a trigger based on equity valuation will be timely. There is an obvious trade-off between the greater timeliness of a short moving average period and the greater reliability of the signal from a longer time period. We suggest 90 days for the moving average based on the experience from the recent crisis, which suggests to us that 90 days offers plenty of time for policymakers to respond to low-frequency disruptions—such as the August 2007 run on asset-backed commercial paper—and also plenty of time for banks to respond to declines in equity value by raising new equity in the market.

With respect to the latter point, we note that between September 2007 and September 2008, some $450 billion in capital was raised by financial institutions. A typical road show for a fully marketed seasoned equity offering is measured in weeks. Although many seasoned equity offerings nowadays are executed on an expedited basis, especially by large firms, it is probably reasonable to assume that the due diligence required to issue equity into the market during a time of severe loss would require the offering to be fully marketed, with a somewhat protracted road show. Hence, we think that a 30-day moving average window for the trigger may be a bit short if the intent is to motivate share offerings in the wake of equity value losses.

A trigger based on the QMVER would also make the valuation of CoCos more predictable. We do not mean to imply, of course, that stock market returns are predictable but rather that markets are able to forecast the time-varying volatility of those returns and therefore to make reasonable inferences about the probabilities of different potential states, including movements into the neighborhood of the trigger. That is useful for pricing CoCos and bank stock, since in the presence of a CoCo requirement the anticipated effects of dilution—both from CoCo conversion and from preemptive equity offerings to prevent CoCo conversion—would factor into the pricing of both CoCos and bank equity. The ability to model conversion when it is based on observable functions of market equity prices is a highly desirable feature of the QMVER trigger.

Will the QMVER be a sufficiently accurate measure of financial condition? Yes, so long as the demands placed on the measure are not excessive. Equity prices are not perfectly reliable, and they are especially unreliable in detecting small

valuation changes over short periods of time. They also may be subject to manipulation. For those reasons, it is useful to sacrifice some degree of timeliness by relying on a moving average. But for the purpose of constructing a credible, predictable, comprehensive, and reasonably accurate measure of large swings in the market value of a SIFI, the market value of the firm is the only real possibility. So long as the user does not seek to achieve false precision, equity is reliable.

For example, suppose a trigger were defined as follows: the CoCo will convert from debt to equity if and when the ratio of the market capitalization of the bank to the quasi-market value of the bank falls to 4%.[41] Assuming the bank started with a prudent ratio of market cap to the quasi-market value of assets, a decline to this trigger point would provide a reasonably accurate measure of a sustained decline in the value of the firm. Since the share prices are 90-day moving averages, no SIFI could reasonably argue that the decline in the value of its equity was the product of market manipulation or irrational shareholder behavior.

Is there cause for concern that CoCo holders might try to force conversion through a coordinated bear run on a bank's stock? We believe that the length of the moving average, the liquidity of the equity market, and the ability of banks to issue equity in response to price declines (discussed further below) would prevent such a strategy from yielding a profit. Nevertheless, as an added precaution against any possibility of market manipulation, we suggest limiting investments in CoCos to qualified nonbank institutional investors and requiring that any such investor be prohibited from simultaneously holding a bank's CoCo and shorting its equity position.[42] That prohibition would not limit short selling in a bank's equity, but would prevent CoCo holders from coordinating a short-selling strategy designed to force CoCo conversion.

Many policymakers and academics have argued in favor of cyclical variation in capital standards, which has also been embodied in the buffer component of the Basel III approach to capital requirements. That topic is beyond the scope of this chapter, but suffice it to say that by fixing the minimum proportion of CoCos relative to the quasi-market value of the firm's assets, our approach would provide strong incentives for firms to raise capital during good times, when they can do so most cheaply. It would also encourage banks to be more cautious about funding unsustainable lending booms with small capital buffers. In that sense, CoCo requirements could automatically help to achieve a key objective of cyclical variation in capital standards even without varying actual capital requirements over the cycle. At the same time, we recognize that time-varying capital requirements for equity and CoCos may be desirable because they would allow firms to reduce outstanding CoCos somewhat in recessions, and to mitigate the contractionary effects of capital requirements on lending. But such reductions should be allowed only if CoCo requirements are raised to above-average levels during expansion periods, otherwise the relaxation of capital requirements will provide inadequate protection against the risk of insolvency.

Because the trigger for CoCo conversion would occur while the SIFI is still demonstrably solvent and because preemptive equity issues (before the trigger point) would result in further increases in equity, the CoCo requirement would arguably make insolvency extremely unlikely. Nevertheless, because unusually severe shocks will occasionally happen, it is still important to have available a prompt corrective action (PCA) regime as well as an effective system of resolution to go with it. And for the same reasons that a ratio of market value to the quasi-asset value of the firm would serve as the best trigger for CoCo conversion, it would also serve as the best trigger for PCA. If the CoCo conversion trigger occurred at 4%, then the PCA trigger should start if the firm breaches the 2% ratio again after the recapitalization achieved by the CoCo conversion.

But this raises another important policy question: If CoCos convert, how quickly should the firm have to reissue a new batch of CoCos? Under our proposal, CoCo conversion would happen only for firms that experience a sudden and lasting loss of the confidence of the equity market. Such firms are likely to become distressed and enter into resolution. But if they do not, they should be required to place new CoCos into the market within a reasonable period of time—say, within a year.[43]

Should CoCo conversion be triggered by *system-wide losses* of capital or other macroeconomic indicators instead of an individual bank's losses? While indexation of bank debts to system-wide states of the world can be justified from a variety of perspectives,[44] in order for CoCos to provide incentives for the appropriate management of risk and capital at each bank, there must be a link between the individual bank's circumstances and the triggering of CoCo conversion. For that reason, system-wide triggers—which are potentially useful for some purposes—are not useful for CoCo requirements of the kind that we envision.

The Right Amount and Conversion Ratio for the CoCos

Because the comparative efficacy of CoCos as an incentive device depends crucially on their dilutive effects on equity holders, it is important that CoCos be issued in sufficient

41. We have chosen a 4% trigger for illustrative purposes because it is roughly equivalent to the 4% Tier One Ratio that prevailed at that time. Since then, the Basel Committee has concluded that standard was not nearly high enough and we concur.

42. Our proposal also prohibits banks from purchasing CoCos—both their own and those issued by other banks.

43. See also Flannery (2009).

44. Dierwood (1984); Hellwig (1998); Glasbeek (2010).

Poorly Designed and Well-Designed CoCos

Two issues of contingent capital—one by Rabobank (a cooperative) and the other by Lloyds—have proven to be significantly more expensive than subordinated debt. But it is important to note that those two issues present very different incentives to the managers than those that would be provided by the CoCos contemplated in our proposal. In the case of Rabobank, which is a mutual, there are no shareholders to be diluted and the conversion terms are extremely unfavorable to the holders of CoCos—an 85% reduction in the value of their claims upon conversion. The Lloyds issue of CoCos was part of an exchange in stressed circumstances. Moreover, the issuance of the bonds during the crisis probably increased their cost.

A more interesting—and to us more instructive—experiment is the February 2011 issue of CoCos by Crédit Suisse. This issue, which was made by a bank that fared comparatively well during the crisis, was designed to buttress the new Basel III capital requirements. Although many institutional investors (especially regulated insurers and bond mutual funds) that have been the main buyers of hybrid capital instruments have warned that they cannot hold the bonds without changing their investment mandates to allow them to hold equity-linked debt, Crédit Suisse reported a large number of inquiries from wealthy individuals seeking higher yields as well as hedge funds and other asset managers hoping to exploit the "price anomalies inherent in a nascent market."[47] Clearly the traditional holders of hybrid capital—instruments that the tax authorities are willing to treat as tax deductible but the regulatory authorities have been willing to count as capital for regulatory purposes—are reluctant to exchange them for CoCos because the regulators have shown by their actions during the recent crisis that they will protect holders of hybrid capital from loss, preferring instead to shift the losses to taxpayers. When the $2 billion Crédit Suisse issue was made, it proved to be an overwhelming success. The CoCos featured a coupon of 7.875% and would be converted if the common equity tier 1 ratio of Crédit Suisse fell below 7%. Crédit Suisse received orders exceeding 11 times the amount on offer.

quantity, especially relative to the amount of equity capital required (since relative dilution is key to ensuring preemptive offerings of equity). For that reason, we suggest that, alongside a roughly 10% requirement for the ratio of book equity[45] relative to book assets, regulators require a similar ratio of CoCos relative to book assets.

To see how such a requirement might have worked during the recent crisis, in which banks were required to hold a minimum of 2% common equity relative to risk-weighted assets (both measured in book value terms), it seems plausible to propose that the minimum required amount of CoCos consistent with our proposal would have been set at roughly 2% of the quasi-market value of the firm's assets.[46] Under those assumptions—employed for illustration only—we note that a 4% trigger would set off a conversion of CoCos equal to 2% of the quasi-market value of the bank's assets. That would imply a huge potential dilution of equity holders. To maximize the incentive effects from the threat of dilution upon conversion, all of the required CoCos should be converted when the ratio hits the trigger.

Similarly, to ensure incentives for preemptive equity offerings, the conversion ratio should be set so that stockholders face significant dilution from conversion. Conversion should thus require the issuance of enough new shares per face value of CoCos that the post-dilution market value of the shares received is greater than the face amount of the CoCos.

To be more specific, and to ensure adequate incentives for timely equity offerings while the bank still has access to the equity market, we propose the following combination of CoCo design features (which are summarized in Table 1): Commensurate with the current Basel III book equity requirement for SIFIs—which envisions as much as a 9.5% tier 1 equity requirement relative to risk-weighted assets—we propose that the amount of CoCos be set at 10% of the book

45. Our CoCos proposal does not link the amount of CoCos to off-balance sheet asset positions, such as derivatives. That could be done, in several possible ways. For example one could use accounting concepts such as the loan equivalent value of the derivatives portfolio, to compute an additional amount of assets or risk-weighted assets, over and above on-balance sheet assets and risk-weighted assets, for purposes of the equity and CoCos requirements. Alternatively, one could argue that improvements in disclosure of derivatives positions might be adequate in the presence of our on-balance sheet CoCos requirement, even in the absence of such additional adjustments. If detailed public disclosures were made about (1) the net long or short positions of the total off-balance sheet positions with respect to the major asset pricing factors (various benchmarks, such as credit risk measures, exchange rate risk, interest rate risk, etc.), (2) the "deltas" of each of those positions (that is, the sensitivity of the value of the net position to changes in the various factors), and (3) the concentration of counterparty risk and the quality of counterparty risk in the gross positions, then the market value and volatility of the bank share price would reflect off-balance sheet exposures reasonably accurately. In the presence of our CoCos trigger, this would incentivize management to manage off-balance sheet risks conservatively, since the failure to do so would create a risk of adverse market reactions, which might require preemptive and dilutive equity offerings, or in extreme cases, even trigger a CoCo conversion.

46. The crisis showed that the regulatory definition of the numerator, the risk-weighted denominator, and the minimum acceptable ratio were completely inadequate. Nonetheless, for this retrospective examination of the crisis it is interesting to see whether employing the quasi-market-value-of-equity ratio would have been informative in separating SIFIs that would require intervention from SIFIs that did not. Basel III will require a much higher level of equity and the issuance of CoCos should be larger as well.

47. Hughes (2011).

Table 1 Summary of Key Features of Proposed CoCo Requirement

Feature	Recommendation
Primary goal	Prompt recapitalization
Minimum amount of CoCos	10 percent of book value of assets
Trigger	QMVER of 8 percent, using a ninety-day moving average of market value
Conversion ratio	5 percent dilutive of the market value of stockholders' shares relative to the face value of their shares
Conversion amount	All CoCos are converted on reaching the trigger
Holders	Qualified nonbank institutional investors holding no short equity positions in the common equity
PCA trigger	If 8 percent trigger is reached twice
Time to replace converted CoCos	One year

value of assets. To ensure adequate dilution risk to shareholders, we propose that all CoCos convert upon hitting the trigger with a conversion ratio that is 5% dilutive of equity holders, meaning that the value of the shares upon conversion is 1.05 times the face value of the bonds. And we suggest an 8% QMVER trigger for CoCo conversion based on a 90-day moving average.

Does Our CoCo Proposal Suffer from a "Multiple-Equilibria" Problem?

Some finance scholars have challenged whether CoCos of the type that we propose are feasible. In particular, Suresh Sundaresan and Zhenyu Wang—hereinafter SW—argue in a 2010 paper that CoCos with market value triggers can suffer from a "multiple-equilibria problem" unless conversion is carefully designed to avoid any dilution of preexisting holders of common stock.[48] In their model, dilutive CoCo conversion leads to the possibility of more than one potential time path of stock prices for any given time path of asset values. SW suggest that such multiple equilibria in share prices could make it impossible to price CoCos and could also lead to potentially destabilizing bear runs on bank stocks, as small perturbations in market prices might lead market participants to switch from a belief in one equilibrium to another. SW therefore conclude that CoCos should not both be based on market equity triggers and convert into equity at ratios that favor CoCo holders—that is, conversion ratios in which the face value of CoCos is converted into more shares than the equivalent amount of equity, using the equity price at the date of conversion.

But, as we demonstrate below, that conclusion, when applied to our proposed CoCo requirement, is incorrect. Nevertheless, as we also show, SW's analysis (and example) can be used to motivate the specific design features of a proper CoCo requirement, which we now provide.[49]

Following SW, we assume a bank with the following asset and liability structure (in which all values are defined in market value): assets of $100; senior bonds (or deposits) of $80; and CoCos of $10. There is also one share of equity whose initial value is $10, and thus the total market value of the bank's equity also starts out at $10. In the absence of a CoCo, the bank's equity share would be valued at $10. But as SW show, in the presence of a CoCo with a market value trigger and a dilutive conversion feature, $10 is only one of the possible values of the equity share.

The following example illustrates the problem identified by SW. We assume that the CoCo conversion trigger is set based on a market value of equity of 5% or less of assets, which in the SW example translates into a stock price of $5 per share or less. The conversion ratio is assumed to be dilutive of preexisting shareholders. Specifically, we assume that the $10 in CoCos converts into three shares of stock if the stock price is $5 (the trigger price). Such a conversion ratio is "dilutive" because the value of the CoCos after conversion—at roughly $15—would be greater than their face value of $10. (A non-dilutive conversion—one in which the value of the CoCo's claim would be roughly the same after conversion as before it—would require a conversion ratio of CoCos into two shares of equity when the equity price is $5.)

Under these circumstances, SW show that there are two equally plausible expected outcomes (or "rational expectations equilibria"): one in which the stock price is $10 per share and no conversion takes place and another in which the stock price is $5 and conversion takes place. Both outcomes are "rational" in the sense that they are consistent with expectations and are fulfilled by equilibrium prices. That is, if the market believes that the price should be $5 per share, conversion will happen, the new number of shares will be four, and the original owners of the bank, who owned 100% of the

48. Sundaresan and Wang (2010).

49. Concerns about multiple equilibria have encouraged some CoCo proponents to design triggers based on book value ratios or to give banks an option to convert rather than require conversion (see Bolton and Samama (2010)). These design choices are problematic. As we have already noted, a book value trigger depends on the behavior of management and supervisors (which is not easily predictable) and thus makes the probability of CoCo conversion difficult to quantify. Giving banks the option to convert creates a different problem: during a crisis, if banks believe that asset prices are temporarily depressed, they may prefer not to convert, thus reducing the benefit of adding new capital to the bank. Furthermore, in a model in which banks have the option to convert, the existence of CoCos will not encourage pre-emptive offerings of equity. Here we show that neither a book value trigger nor a bank option for conversion is necessary to deal with the potential problem of multiple equilibria.

bank's equity prior to conversion, now own only 25%. The new amount of equity will be $20, since $10 in CoCo debt was cancelled upon conversion causing net worth to rise by the same amount. And the price per share of equity will be $5.

But what if instead the market believes that the price should be $10? In that case, conversion will not occur (since the market value of equity does not hit the 5% trigger). And so we have an example in which two different share values can be described as rational expectations equilibria. That is to say, if the market believes the price is $5 per share, then that belief would turn out to be true—but if the market believes the price is $10 instead, then that belief would turn out to be true.

There is, however, a problem with this argument. Without stating it, SW make a critical assumption that effectively determines their conclusion: namely, that the market *knows* that the bank will take no action to prevent the low-stock price equilibrium of a $5 share price from occurring. In other words, SW's argument implicitly requires that the bank refrain from issuing new equity if the price of equity begins to fall toward the lower equilibrium value of $5.

To see why this implicit assumption is important, consider the following amendment to the SW example. We make all the same assumptions employed in SW but make two additional assumptions: one, it is possible for the bank to issue new shares prior to conversion if the price of shares in the market starts to move toward the lower equilibrium price; two, a moving average trigger is used whereby the triggering of conversion occurs only if the stock price falls to the trigger value or below for a finite length of time.

Under these assumptions, if the share price begins to fall below $10, the bank could issue one share of common stock into the market at, say, any price between $10 and $5 a share. To be more specific, suppose that the stock price falls to $5 and that the bank issues one share of stock into the market at $5 a share. Doing so raises both the value of assets and the value of equity by $5. Because the trigger for CoCos is defined in terms of the ratio of market value of equity relative to assets (the QMVER), at a $5 share price, *conversion will not take place*, since the offering of a new share has raised the new QMVER above 5%.

Note that without conversion the lower equilibrium price of $5 a share is no longer a rational expectations equilibrium, since the expectation of conversion that underlay the $5 price will not be realized. Indeed, the price of equity would rebound to $7.50 a share (which contradicts the $5 equilibrium assumption) if the share price had actually fallen to $5, prompting the bank to issue the single share into the market.

But this "out-of-equilibrium" offering and price volatility should not occur, since the $5 share price is no longer a rational expectations equilibrium; therefore, there is no reason to expect that the price would ever have fallen to $5 in the first place. The bank will never have to issue into the market at $5 a share, since $10 is now the unique equilibrium price (and arbitrage in the market will ensure that the market price will never fall below $10). Moreover, as our example makes clear, the bank will want to announce and follow this share-issuance policy, since this would enable it to avoid the dilutive conversion of CoCos that occurs in the lower price equilibrium.[50]

Several clear lessons emerge from this analysis. First, in light of the possibility of multiple equilibria, it is especially desirable to put a moving-average process into the definition of the trigger, which would require, as in the example above, that the QMVER trigger be hit over a period of time, not just at a moment. Second, when considering the necessary length of time for that moving average, it is important to make sure that the period is long enough to give management time to arrange for a preemptive equity offering to prevent conversion. As stated earlier, we believe that a 90-day moving average would allow plenty of time for a stock offering. In the next section of the paper, we show that using a 90-day moving average during the crisis of 2007-09 would have provided ample opportunity for banks that were losing equity value to have issued equity to restore their QMVERs.

Third, CoCo triggers should be set relative to the QMVER, *not* the share price. Stock offerings could change the price per share (as could a stock split); obviously, it is the total equity buffer that should matter from the perspective of the CoCo trigger, and that should be set as a proportion of assets.

In summary, we have shown that our CoCo proposal does not suffer from the SW multiple-equilibria problem. A substantial CoCo requirement—one that requires banks to maintain a significant proportion of their balance sheet financing in the form of CoCos—with a dilutive conversion ratio that is triggered by a smoothed QMVER trigger (which we define as the 90-day moving average) would not produce multiple equilibria in the pricing of bank stock.[51]

How the CoCos Requirement Would Have Worked In 2007–08

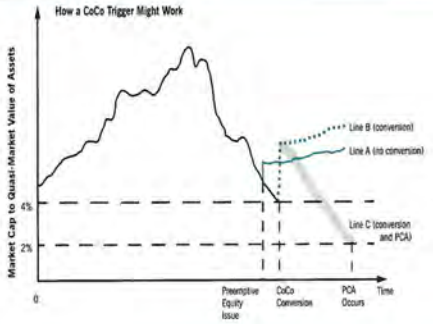
Figure 2 illustrates how the proposed CoCo trigger would work for three different firms in somewhat different circumstances.

As the QMVER falls, approaching the trigger, a firm like A (whose path of values is shown in line A) would issue equity (or sell assets) to avoid hitting the trigger.

50. As early as 2009, many advocates of CoCos with dilutive conversion were pointing precisely to the incentives CoCos can create for timely issuance of common stock to prevent dilutive CoCo conversion (D'Souza and others (2009)). Indeed, as we emphasize, this feature of CoCos has been central to the discussion of why they would be helpful in preventing "too-big-to-fail" bailouts.

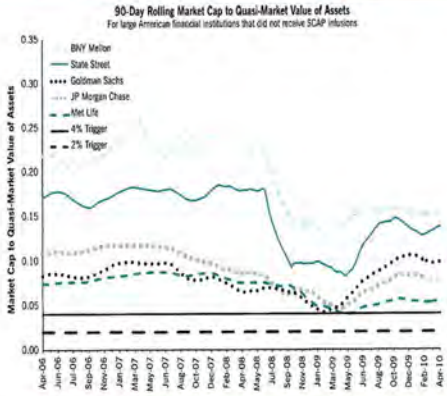
51. Our solution to the multiple-equilibria problem is different from that in Pennacchi, Vermaelen and Wolff (2010) and Pennacchi (2010). In that proposal, incumbent stockholders have the right to purchase converted equity at a non-dilutive price from new (post-conversion) stockholders. That option avoids multiple equilibria, but because it eliminates the cost of dilution on incumbent stockholders, it also dampens the incentive to raise new capital to replace lost capital or to manage risk better ex ante, which we see as central advantages of our proposal.

Figure 2 How a CoCo Trigger Might Work



Source: Author's illustration.

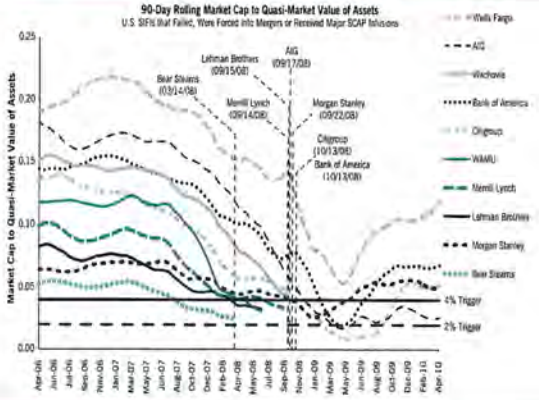
Figure 3 Ratio of the Market Cap to the Quasi-Market Value of Assets for the Five SIFIs That Did Not Require Substantial Government Intervention, April 2006–April 2010



Source: Author's illustration.

If for some reason a firm like B is unable or unwilling to issue equity or sell assets, the conversion of CoCos is triggered (line B). That will result in massive dilution of existing shareholders, who will undoubtedly be angry, and the new shareholders who formerly held CoCos are likely to be unhappy as well. Shareholder dissatisfaction on this scale is likely to lead to the ouster of the existing management and the installation of new management that will strengthen the governance of risk. And so CoCo conversion might enhance the virtually moribund market for corporate control of regulated financial institutions—an important element of market discipline that is largely ineffectual among regulated banks. It will certainly add management's motivation to take corrective action before reaching the trigger. The doubling of capital and reduction in

Figure 4 The Ratio of the Market Cap to the Quasi-Market Value of Assets for Ten Banks That Required Substantial Government Intervention, April 2006–April 2010



Source: Author's illustration.

liquidity pressures (and perhaps a new management team) may buy the firm enough time to successfully restructure.

Finally, we come to the case of firm C, which may be unable to use the additional capital and time to accomplish restructuring or recapitalization. Its value continues to decline until prompt corrective action is triggered at, say, 4% (line C).

Figure 3 shows the movement from April 2006 to April 2010 of the ratio of the 90-day moving average of the market cap to the quasi-market value of assets for five SIFIs that did not require government support. It is important to emphasize that this simply illustrates the ability of the QMVER ratio measure to distinguish between soundly managed institutions and weaker institutions; it does not show what would actually have happened if all institutions had been subject to a CoCo requirement.[52] Note that none of these institutions fell below the 4% ratio. If the CoCo requirement had been in place, only Goldman Sachs and MetLife might have triggered a conversion. The prospect of dilution, however, would almost certainly have caused the managers of both firms to issue more equity or sell assets to avoid hitting the trigger.

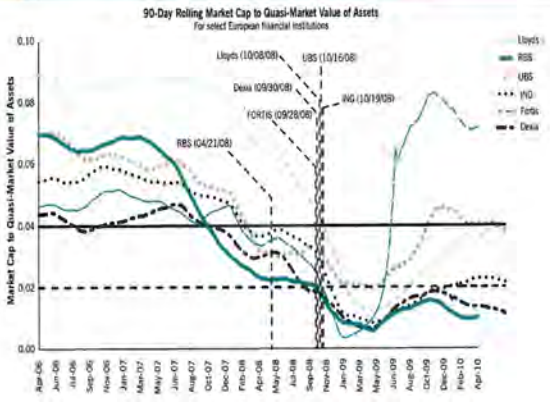
Now consider the contrast of Figure 3 with Figure 4, which shows the movement of the ratio of the market cap to the quasi-market value of assets for ten banks that required substantial government support, were forced to merge, or entered bankruptcy. Note that all of these firms breached the 4% ratio and, in most cases, they did so many months before they were subject to intervention. It is especially noteworthy that Bear Stearns, Lehman Brothers, and AIG—all of which appeared to catch the supervisory authorities by surprise and were subject to different interventions, hastily improvised over sleepless weekends—had in fact fallen below the 4% trigger several months earlier. It is possible that a CoCo requirement might have induced those firms to adopt higher standards of risk governance and make more aggressive attempts to raise capital or sell assets. At a minimum, it would have bought them additional time to prepare for an orderly resolution and would have been a clear warning to regulators to refine their rapid resolution plans.

Figure 5 shows a similar pattern for the European banks that required large-scale intervention. In almost every case, the 4% ratio was breached long before intervention was hastily arranged.

In summary, a 4% trigger based on the ratio of the market cap to the quasi-market value of assets might have been an effective device for preventing the collapse of all of these troubled SIFIs during the 2008-09 crisis. Moreover, each of these institutions would have faced strong incentives to strengthen preemptively the corporate governance of risk and,

52. In the presence of our proposed CoCo requirement, the rate of decline in the QMVER would be higher than in the absence of the requirement. Stock prices would take into account the small probability of conversion, and as the QMVER approached the trigger and that probability increased, two effects would reduce stock prices: the dilution that existing shareholders would suffer from conversion, and the loss of tax savings from the deductibility of interest. Those effects, however, would be small, since the probability of conversion would remain small (banks would endogenously prevent the QMVER from getting too close to the trigger value by issuing equity).

Figure 5 **Ratio of the Market Cap to the Quasi-Market Value of Assets for European Banks That Required Substantial Government Intervention, April 2006–April 2010**



Source: Author's computation based on data from Datastream.

if necessary, issue equity or sell assets to avoid triggering their CoCos months earlier. And the supervisors could not have claimed to be taken by surprise at the sudden collapse of the firms. Although we illustrate our counterfactual with a 4% trigger, we suggest an 8% trigger for our CoCo conversion requirement because it would have worked even more effectively to prevent the post-September 2008 collapse by creating stronger incentives for voluntary equity issuance by banks long before September 2008.

In particular, our proposed CoCo requirement would have reduced the damage from the two largest failures—those of AIG and Lehman Brothers. Although counterfactuals are speculative by definition, at least three reasons suggest that such a system would have been effective if AIG and Lehman Brothers had been identified as SIFIs.

First, the issuance of CoCos would have enhanced market discipline and limited their risk taking.

Second, both firms crossed the CoCo trigger six to eight months before their demise. Since Lehman was heavily owned by its managers and employees, the prospect of dilution would have surely concentrated their minds on raising new equity, while they still had access to equity markets, or on selling lines of business or assets. And even if they had hit the conversion trigger, the automatic recapitalization would have given them more time to find a private solution to their problems, which might have involved a merger, a restructuring, an additional recapitalization, or a change in management. At a minimum, it would have warned the supervisors and resolution authorities of impending trouble so that there would have been no need to engage in desperate measures over a sleepless weekend. Breaching the PCA trigger would have conserved liquidity by restricting dividends, share buybacks, and bonuses.

Third, the primary supervisor and the college of supervisors would have had warning to prepare for the challenges that they would face in a resolution.

Fourth, even if the proposed CoCo requirement had not prevented the disorderly failures of Lehman Brothers and AIG, the consequences for other financial institutions of those failures, and for the financial system as a whole, would have been far milder under our proposed requirement. If other large financial institutions had been encouraged by CoCo requirements to maintain higher capital ratios in 2007 and 2008, the severe consequences of the collapse of money markets might have been averted. The collapse of interbank deposit, repo, and asset-backed commercial paper markets reflected ballooning counterparty risks among these global intermediaries. If large banks had issued sufficient capital in response to their losses in 2007 and early 2008, such counterparty risk would have been contained.

Since regulation of book capital ratios and supervision has proven so ineffectual, it is high time to place a greater emphasis on market signals that discipline SIFIs. CoCos, suitably designed, can be an ideal instrument for channeling such discipline in a way that strengthens the stability of the financial system.

Conclusion

We have developed a proposal for a contingent capital (CoCo) requirement and shown that CoCos can play a unique and critically important role alongside a standard minimum book-value-of-equity-ratio requirement. If properly designed, a CoCo requirement can provide a more effective solution to the too-big-to-fail problem by ensuring adequate capital relative to risk, and it can do so at a lower cost than a simple equity requirement. A proper CoCo requirement can provide strong incentives for the prompt recapitalization of banks after significant losses of equity or for the proactive raising of equity capital when risk increases. Correspondingly, it can provide strong incentives for effective risk governance by regulated banks, and help limit regulatory "forbearance," supervisors' well-known reluctance to recognize losses.

Different proposals for CoCo requirements reflect different regulatory objectives, including facilitation of bail-ins, signaling of bank risk, and encouragement of timely voluntary offerings of equity into the market by banks that have suffered significant losses. We argue that the third of these objectives is the most important, especially for dealing with the too-big-to-fail problem.

Thus, the emphasis on the need to provide effective incentives for the timely issuance of equity informs our discussion of the proper design of CoCo contracts that would be implemented by the CoCo requirement. We show that, to be as effective as possible, a large amount of CoCos (relative to common equity) should be required; CoCo conversion should be based on a market value trigger that is defined by a moving average of a quasi-market-value-of-equity ratio; all CoCos should convert if conversion is triggered; and the conversion ratio should be dilutive of preexisting equity holders. (The details of our proposal are summarized in Table 1.)

Finally, our proposed CoCo requirement does not suffer from a potential problem of multiple equilibria, as some banking and finance scholars have claimed. Judging as best we can from the experience of the recent crisis, our proposed requirement would have been very effective in encouraging the timely replacement of lost capital early in the crisis. If a CoCo requirement had been in place in 2007, the disruptive failures of large financial institutions and the systemic meltdown after September 2008 may well have been avoided.

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Appendix The Smoothing Effect of a Ninety-Day Moving Average on the Quasi-Market-Value-of-Equity Ratio, April 2006–April 2010

Source	Amount of CoCos to be issued	Trigger for conversion	Terms for conversion
Doherty and Harrington (1995)	Authors use the term "reverse convertible debt." Issue will be the optimal amount of leverage for the firm. All debt will be converted when trigger is reached.	At the discretion of shareholders.	The value of new shares given to bondholders is less than the face value of the debt.
Huertas (2009)	An amount equal to some specified proportion of risk-weighted assets. From the diagram on p. 4, that appears to be the same proportion as that of core tier 1 capital to risk-weighted assets.	Finding by regulators that the core tier 1 capital ratio has fallen below a specified level.	Implicitly all contingent capital will be converted. Although Huertas stresses the importance of the threat of dilution, he does not specify the terms for conversion.
D'Souza and others (2009)	The amount issued should be large enough that the firm can be recapitalized even in dire circumstances. (Back tests suggest that CoCos equal to 6 percent of RWA would have avoided government intervention in the 2007–09 crisis.)	A "true" measure of capital above the solvency point. Authors reject market values as too volatile and accounting measures as too slow to reflect deterioration. Prefer SCAP-like stress test that would calculate a two-year forward capital ratio for the firm.	Conversion terms must be sufficiently dilutive to original shareholders to motivate them to raise equity before hitting the trigger. The more dilutive the terms of conversion and the higher the trigger point, the lower the cost of issuing CoCos because they are less likely to be converted.
Dudley (2009)	Amount should be large because cost should not differ much from cost of straight debt and shareholders must face the potential for automatic and substantial dilution. Full amount issued will be converted when trigger is reached.	Trigger could be tied to deterioration in the condition of a specific bank and/or to the banking system as a whole. It also could be tied to regulatory measures of capital, but Dudley prefers market measures because they tend to lead regulatory-based measures.	"The conversion terms could be generous to the holder of the contingent capital instrument" (p.7). Conversion terms should be set so that debt holders could expect to get out at or close to par value.
Duffie (2009)	Duffie assumes the full amount would be converted when the trigger is reached.	The trigger that converts debt to equity should be set to eliminate the debt claims before a liquidity crisis is likely to begin and with a strong enough impact on the balance sheet to forestall a self-fulfilling presumption of a liquidity crisis. Duffie rejects a regulatory capital trigger. Favors tangible common equity trigger if restricted to accounting measures. Advocates a market value trigger but warns that unless a moving average is used, it can precipitate a "death spiral."	Debt conversion should be accompanied by another sort of contingent capital that will immediately improve the cash position of the bank. Duffie favors a rights offering.
Flannery (2009)	Flannery uses the term "contingent capital certificates" (CCCs). Firms would not be required to issue CoCos, but CCCs could be used to offset the required amount of equity capital. Some of the CCCs would be converted to equity to replace lost equity value. Supervisors determine the minimum equity capital ratio and trigger point. SIFIs cannot hold any CCC for their own account. Since conversion may be partial, it must rely on an allocation mechanism: convert shortest remaining maturities first; sell with various seniorities so that some bonds must convert fully before others can begin to convert; select bonds randomly within a common maturity or common seniority tranche; select CCCs by lottery.	Would convert into equity if firm's capital falls below some critical, prespecified level. Conversion trigger must be expressed in terms of contemporary value of equity and scaled by the book value of assets.	The contemporary market price determines how many shares the holders of CCCs obtain. The terms for conversion should ensure that they suffer no capital loss. Conversion must happen the day after the trigger is reached. If firm is insolvent because of a sudden collapse in asset prices, covenants in CCCs must specify a conversion price that wipes out original shareholders.
Rajan (2009)	Banks should issue sufficient CoCos so that, when converted, they will dilute the value of old equity substantially.	Two triggers: the system is in crisis based on objective indicators such as aggregate bank losses, and the bank's capital ratio falls below a certain value.	The number of shares the debts convert into should ensure substantial dilution of old equity.

Source	Amount of CoCos to be Issued	Trigger for Conversion	Terms for Conversion
Squam Lake Working Group (2009)	Banks must be required to issue CoCos because they will otherwise issue other debt securities more likely to shift costs of risky activities to government. When conversion is triggered, presumably all CoCos are converted.	Two triggers: declaration by regulators that the financial system is suffering from a systemic crisis; and the bank is found in violation of covenants in its CoCo contract expressed as a ratio of Tier 1 capital to risk-weighted assets.	Authors fear that a conversion rate based on market values would trigger market manipulation. They prefer to convert each dollar of debt into a fixed quantity of equity shares rather than a fixed value of equity.
Flannery and Zingales (2010)	Authors reject CoCos, arguing that by limiting defaults, CoCos will provide more resources for inefficient managers to waste, while a default would force an inefficient business to restructure and incompetent managers to be replaced. They argue instead for direct issues of equity triggered by CDS price of a bank's debt exceeding a specified threshold.	An example suggests trigger might be that a bank's CDS price exceeds 1 (percent) on average over the previous month. Authors express concern about finding an appropriate CoCo trigger. If based on accounting numbers, it is likely to trigger remedial action that will lag actual deterioration in bank assets. If conversion is triggered when market prices are low, managers could deliberately talk down bank's value to activate trigger and obtain equity on the cheap.	Direct issuance of equity would substitute for conversion of debt. Presumably sufficient equity must be issued to reduce the CDS price below 1 percent.
Albul, Jaffee, and Tchistyi (2010)	Full amount will be converted. Authors also stipulate that CoCos should be substituted for straight debt. They do not specify the amount to be converted.	Conversion is triggered when capital reaches a "distressed level," but regulatory benefits are greater the higher the trigger at which conversion occurs.	No exact ratio is given, but authors emphasize that the conversion ratio of CoCos into shares should not motivate either holders of CoCos or shareholders to manipulate share prices.
McDonald (2010)	Amount of CoCos issued has an initial value equal to the initial value of equity. All will be converted when dual triggers are reached. If CoCos are not converted, bonds would be retired gradually and randomly as maturity approaches to avoid large gains that could occur from manipulation at maturity.	Conversion with a dual price trigger: the bank's shareholders' equity price must fall below a threshold and an index of financial firms' stocks must breach a pre-specified threshold. The rationale is to ensure that conversion is permitted only during a financial crisis. Market price triggers should reduce pressure on regulators and accountants at critical times.	Conversion occurs into a fixed number of shares at a premium price (so that the value of the shares upon conversion is lower than the par value of the bonds) in order to minimize concerns about share price manipulation and equity death spirals. Author expresses concern that unprofitable stock price manipulation might create a profit if trader also holds a position in market-triggered CoCos. Author believes fixed-share conversion is most likely to deter such behavior.
Pennacchi (2010)	Assumes that all contingent capital converts to equity when a threshold is breached. (Partial conversion introduces additional complications because the value of shareholders' equity at conversion will depend on the value of unconverted CoCos.)	Trigger is stated as ratio of market value of equity to face value of deposits.	If threshold is stated in terms of market value of original shareholders' equity and contingent capital converts at a discount to face value, the resulting total capital will be less than if the conversion were at par. To correct for this, a higher threshold should be used when conversion is at less than par than when conversion is at par. Concludes that CoCos would be a low-cost means of mitigating financial distress and would reduce a bank's moral hazard incentives so long as the conversion threshold is set at a relatively high level of original shareholders' equity.
Calomiris (2010)	Amount of CoCos issued should be set relative to a firm's short-term debt in an amount large enough that short-term creditors will not fear insolvency. May be negotiated case by case.	Multiple triggers for partial conversion set relative to substantial declines in share price. For example, 25 percent of CoCos might be converted with a 25 percent decline in share prices since the time that the CoCos were issued. Another 25 percent would convert if the share price decline reached 50 percent, and the balance would convert if the share price fell by 75 percent.	Conversion would be for an equal face value of cumulative, senior, nonconvertible, preferred stock with voting rights. The intent is to dilute equity to deter excessive risk taking and to create a class of voting preferred shareholders who would be rationally risk averse and would curb pressures for excessive risk taking.

Source	Amount of CoCos to be issued	Trigger for conversion	Terms for conversion
Sundaresan and Wang (2010)	Full amount will be converted. Amount issued not specified. Upon conversion, dividends are automatically suspended.	Trigger price and conversion ratio cannot be chosen independently.	Mandatory conversion must not result in any value transfer between equity and CoCo holders. The authors conclude that only one conversion ratio is an equilibrium, and it depends on the design of the CoCo. The CoCo must be designed so that the coupon payments are indexed so that the CoCo always sells at par. In this case, the conversion ratio is simply par value divided by the trigger level of the stock price at which mandatory conversion will occur.
Swiss State Secretariat for International Financial Matters (2011); Swiss Commission of Experts (2010)	The authors envision two kinds of CoCos with two different triggers. Up to 3 percent of buffer capital (= 8 percent of risk-weighted assets) may be composed of CoCos. The progressive component of capital requirements is to be composed of 6 percent CoCos. That leads to a total capital requirement of 19 percent of RWA, comprising at least 10 percent common equity and up to 9 percent CoCos.	CoCos with a trigger of 7 percent of risk-weighted assets serve as a capital buffer. CoCos with a trigger of 5 percent of RWA should ensure the necessary capital reserve to finance the maintenance of systemically important functions and to see to the orderly resolution of the remainder of the bank in the event of threatened insolvency.	Conversion rate is not specified explicitly, appears to be 1 unit of equity for 1 unit of convertible debt.

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JULY 16, 2014

I would like to thank Senator Brown and the Members of the Senate Committee on Banking, Housing, and Urban Affairs and Consumer Protection Subcommittee on for the opportunity to speak here today. The issue of systemically important financial institutions is of critical importance to the stability of financial markets and the ultimately the macro economy. Understanding what makes a financial firm systemic is the first step in designing an institutional and legal framework to rein in systemic firms. Viewing systemic spillovers as market failure we need to identify the source of that market failure, the severity of the market failure, whether the market failure merits Government intervention and if so, the most economically effective way to structure that intervention.

United States financial history over the past 40 years is littered with examples of Government interventions into financial markets in response to lobbying by particular sectors (esp. housing) to the pending failure of large financial institutions. Early on we referred to these intuitions as too big to fail and the public policy issue as the too big to let fail problem. One of the themes I want to sound today is that too big to fail is a misleading term. Size is not the distinguishing characteristic that makes financial firms systemic. Section 113 of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (hereafter called "Dodd-Frank") lists 11 such characteristics. However, the factors that lead to institutions "being treated" as systemically important also tend to be prevalent in larger firms. It is important to emphasize that decisions on how we handle economically failed financial institutions are themselves an important source of systemic risk. We need to understand whether an institution authorities label as systemic in the handling of its economic insolvency are truly systemic, or merely politically expedient.

During a 30-year career as a financial economist I have studied financial markets, banking, payments systems, failed bank resolution, and the Federal financial safety net from a public policy perspective. The ideas I express today observations below are informed by reading and research I have done in these areas, especially papers on systemically important financial institutions, the need for an asset salvage agency, and systemic banking crises. [1]

As I mentioned above, the past 40 years of U.S. financial history is replete with examples of economically failed financial firms whose solvency resolution involved systemic considerations or were handled through regulatory forbearance (that is, were allowed to continue operations with the hope that they would recover). Examining a number of these cases and the stated rationale for how they were handled allowed me to identify four sources of systemic importance. It is important to note systemic importance in these cases was based on a judgment call in the face of a potentially disruptive event in financial markets and not hard evidence the firms were indeed systemically important.

Sources of Systemic Importance

Obviously size, an imperfect measure of systemic importance, is correlated with systemic importance because large financial firms are more likely to have characteristics of systemic importance. The $50 billion threshold set by Title I Sec 121 of Dodd-Frank is probably sufficiently low that it captures the lion's share of banking companies that would be flagged under one or more of the systemic criteria discussed below. However, just relying on size does not give us an understanding of how to design laws and regulatory infrastructure to deal effectively with systemically important institutions. Along with size I would stress what I call the "4 C's" of systemic importance: Contagion, Correlation, Concentration, and Context/Conditions, and discuss how each of the 4 C's has been part of the rationale for generous treatment of the creditors, managers and stockholders of troubled financial firms.

In the systemic context, Contagion is a metaphoric way to describe the transmission of losses across the financial system or the locking up of financial markets from the insolvency of one or more major financial firms. Contagion as a source of systemic importance appears on the scene in 1974 with the failure of Bankhaus I.G. Herstatt AG, which failed coincidentally as the United States authorities were deal-

[1] James B. Thomson, "On Systemically Important Financial Institutions and Progressive Systemic Mitigation", *DePaul Business & Commercial Law Journal* 8 no. 2 (Winter 2010), 135–150; James B. Thomson, "Cleaning up the Refuse From a Financial Crisis: The Case for a Resolution Management Corporation", *The Florida State University Business Review* 10 no. 1 (Spring 2011), 1–23; Ozgur E. Ergrungor and James B. Thomson, "Systemic Banking Crises", *Research in Finance* 23 (2006), Elsevier Ltd., Amsterdam, 279–310.

ing with the largest protracted U.S. bank failure resolution to date, Franklin National Bank, 1974, and the 1984 FDIC rescue of the Continental Illinois Bank and Trust Company.[2] Contagion would also seem to be a factor in the 2008 Federal Reserve Bank of New York's assisted acquisition of Bear Stearns by JPMorgan Chase. The 'breaking of the buck' by Reserve Primary Money Fund in September 2008 following the Lehman Brothers bankruptcy filing in is another example of contagion. Contagion is a fundamental consequence of the degree of a megafirm's interconnectedness, be it through the payments system, a clearing, and settlement system, asset holdings, or off-balance sheet contracts (such as derivatives).

Currently we do not collect information with sufficient granularity for us to understand the potential for contagion in the market place or how to aggregate what information exists in ways that would let us measure, monitor and police this risk. Information and clearing requirements in the over the counter (OTC) market under Title VII Sections 725, 728, 729, 742, 763, and 764 of Dodd-Frank could produce some of the information needed. However, much more needs to be done to identify the dealer's counterparties. Congress should direct the Office of Financial Research (OFR) to collect International Swap Dealers Association (ISDA) master agreements for the purpose of constructing measures of exposure in the OTC derivative markets. Moreover, financial institutions with assets in excess of the $50 billion threshold for systemic banking companies should be required to report to Federal financial market supervisors and to their Boards of Directors any exposures to another financial firm in excess of 10 percent of their tier-I capital. Such exposure should be broken down by type—funding market, clearing and settling, interfirm balances (including correspondent balances), lending and security holdings, and off-balance sheet exposure. Collecting this information would allow the Federal Reserve to determine if the limits to be set on exposure should below the 25 percent of capital under Section 165 of Dodd-Frank. It would also promote the orderly resolution of a failed financial firm as regulators could work to limit the spillover effects of the firm's failure without automatically resorting to blanket guarantees of the financial firm's creditors.

Correlation can create a too-many-to-fail problem. It occurs when many institutions hold similar balance-sheet positions.[3] Correlating one's risk taking enhances political clout to resist closure should the firm become insolvent. Financial supervisors will face pressures to forbear as the cost of dealing with an insolvent industry will be high from a fiscal and political standpoint.[4] When risky bets go bad the odds of survival are increased if a firm is one of many facing ruin. Examples of this phenomenon in U.S. financial history include the 1980s savings and loan debacle (correlated interest rate risk), the 1980s international debt crisis (correlated sovereign risk), and more recently the subprime mortgage crisis.[5]

Today, measurement of correlation across Dodd-Frank classified systemic financial firms is being addressed through the Comprehensive Capital Analysis and Review (CCAR) stress tests conducted by the Federal Reserve. These tests are mandated under Title I Section 121 of Dodd-Frank. While the results of the stress tests are scrutinized at the institution level as part of the capital planning review, information on the extent of loss exposure across firms subject to the stress tests under the various shock scenarios would give a clear picture of the extent to which these firms are taking on correlated risks. The stress tests should include specific industry shocks such as a decline in commercial real estate prices for financial market sectors that represent a growing share of the risk exposure of the financial services industry. Again, aggregation of risks across firms is the problem. This may require the reporting of asset exposure by 3 digit Standard Industrial Classification (SIC) codes for all CCAR firms and nonbank financial firms that meet the conditions to be considered systemically important by the Financial Services Oversight Council (FSOC).

The third source of systemic importance is Concentration. Here we are referring to market concentration, the presence of a few big players in a key market or activity and the degree of contestability (the ease with which new firms can enter). Con-

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[2] Walker F. Todd and James B. Thomson, "An Insider's View of the Political Economy of the Too Big to Fail Doctrine", *Congressional Record*, vol. 138 (no. 102), S9978–9987 (July 20, 1992), 102nd Congress, 2nd session. Reprinted from "Public Budgeting and Financial Management: An International Journal", vol. 3 (no. 3), pp. 547–617 (1991). Also published as Working Paper 9017, Federal Reseve Bank of Cleveland (December 1990).

[3] See Janet Mitchell, 1988, "Strategic Creditor Passivity, Regulation, and Bank Bailouts", CEPR discussion paper no. 1780.

[4] See Edward J. Kane, 1989, *The S&L Insurance Mess, How Did It Happen?* Washington DC: The Urban Institute Press.

[5] See Alessandro Penati and Aris Protopapadakis, 1988, "The Effect of Implicit Deposit Insurance on Banks' Portfolio Choices With an Application to International Overexposure", *Journal of Monetary Economics*, 21: 107–126.

centration becomes a source of systemic importance when the failure of a firm causes a major disruption or the locking up of a key financial market or activity. Two prime examples of this are in the set of financial contracts that are not subject to the trust-avoidance provisions of United States bankruptcy law. Currently, the seven largest U.S. banks account for 98 percent of OTC derivative contracts written by U.S. banks. Reportedly JPMorgan Chase has had as much as 40 percent share of the plain vanilla interest-rate swap market. It is hard to imagine that the impact of a JPMorgan Chase failure on the SWAPS market would not influence how its insolvency would be handled.[6] The other example is the triparty repo market, a $1.6 trillion market where hundreds of billions of dollars of intraday credit is extended by the two large depository institutions (Bank of New York Mellon and JPMorgan Chase) that serve as the intermediaries (clearing banks) in that market.[7]

The fourth source of systemic importance for a financial firm is context/conditions, that is, the economic or financial market conditions at the time the firm becomes insolvent. Firms that come under financial distress during a period of market fragility are more likely to be treated as systemic than firms that run aground during more normal market conditions. Context/conditions explains why Drexel Burnham Lambert filed for bankruptcy in 1990 but Bear Stearns was put through a Federal Reserve Bank of New York assisted merger in early 2008. It also partially explains why the Federal Reserve Bank of New York intervened to broker a deal for Long Term Capital Management.[8] Context/conditions includes the exercise of political clout, something Members of your Committee are very familiar with.

Dodd-Frank Reforms

Dodd-Frank was enacted in 2010 in response to the financial crisis. It is a massive piece of legislation—848 pages and 16 Titles. The Act contains a number of provisions dealing with systemically important institutions. Below are my thoughts on Sections 113, 115, 121, and 165 and Title II of Dodd-Frank. I will also discuss the need for supervisory contingency/disaster plans so as to facilitate orderly resolution of systemically important financial institutions in a time-consistent manner.

Factors for Systemic Determination Under Section 113 of Dodd-Frank

The period leading up the financial crisis saw the emergence of "Shadow Banks"—nonbank financial intermediaries engaged in activities that mirror banking. These shadow entities resemble banks in that they tend to employ a high degree of leverage and financed opaque assets with short-term liabilities. Shadow banks and shadow banking activities are a form of regulatory arbitrage as activities move from the more heavily regulated banking sector into a less regulated sector. Hence, it is important to identify nonbank financial firms that are systemically important.

The general criteria outlined in Section 113 of the Dodd-Frank for determining the systemic importance of a nonbank financial firm are consistent with what would be suggested by my the 4 C's above. In fact, the 11 factors the FSOC is to use go beyond what I identified in my research. Setting so many characteristics that FSOC must use in determining whether nonbank firms are deemed systemically important financial institutions creates unnecessary discretion that invites political manipulation. Measuring systemic risk by the value of a firm's taxpayer put provides a more concrete and accountable way for FSOC to determine who is and is not systemically important.

FSOC's Authority Under Section 115 of Dodd-Frank

Section 115 of the Dodd-Frank provides FSOC a consultative role in the supervision of systemic financial firms. That is the FSOC can make recommendations on the Federal Reserve Board concerning regulations, supervisory standards and disclosure requirements applicable to systemic firms supervised by the Federal Reserve. It is unclear whether the FSOC's role under Section 115 will have much of an impact. The Board of Governors and other agencies are not required to follow FSOC recommendations and other avenues exist for financial supervisors to provide input into new regulations and supervisory policies and procedures.

It may be the case however, that public and political pressure that would come with the issuance of guidance by the FSOC to the Board would influence the Board's decisions with respect to supervision of systemically important financial firms. Congress could increase the influence of the FSOC by holding hearings where the Fed-

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[6] For the over the counter derivatives markets the reforms to that market under Title VII of Dodd-Frank may lessen the systemic importance large banking companies may derive from the SWAPS market.

[7] *http://libertystreeteconomics.newyorkfed.org/2011/04/everything-you-wanted-to-know-about-the-tri-party-repo-market-but-didnt-know-to-ask.html#.U8FZVLFwV2M*

[8] *http://www.clevelandfed.org/research/policydis/pdp19.pdf*

eral Reserve Chairman must explain how the Board implemented FSOC recommendations and if it did not, why not.

Section 121 of Dodd-Frank

Section 121 largely clarifies powers the Federal Reserve likely had under existing banking law and extends this authority to nonbank firms subject to supervision by the Federal Reserve. To the extent that financial system supervisors failed to act because they were uncertain as to their authority under U.S. law, Section 121 of the Dodd-Frank could improve the effectiveness of the Federal Reserve in its oversight of systemically important financial institutions. I question, however, whether clarity of authority to act is constraint on financial supervisors. The Bear Stearns and AIG rescues, along with the extension of the financial safety net through aggressive use of 13(3) lending authority by the Federal Reserve and the FDIC's Temporary Liquidity Guarantee Program, suggest a willingness of financial supervisors to act when statutory authority is unclear.

Under a liberal reading one can argue that Section 121 directs the Federal Reserve Board to take into account systemic risk when reviewing mergers and acquisitions by systemically important financial companies under Federal Reserve supervision. I believe that systemic risk should be a consideration by the Federal Reserve when reviewing any proposed merger or acquisition, and in any proposed restructuring of a financial company under its regulatory purview. Furthermore, I believe that systemic risk should be part of the Justice Department's antitrust guidelines.

Section 165 of the Dodd-Frank Act (2010)

Section 165 of the Dodd-Frank has five provisions of particular note. First is the limit on the leverage ratio, setting the minimum amount of equity a systemically important company must hold. Second are the resolution plan provisions (living wills) that systemically important companies must file detailing how they would dismantle the company under Chapter 11 of the Bankruptcy Code. Third are the limits on exposure to a single counterparty which we discussed above. Fourth is the authority for the Federal Reserve to set limits on short-term debt. Finally, there is the requirement of annual stress tests.

Section 165 more than doubles the minimum leveraging standard from 33 to 1 to 15 to 1 for systemically important financial institutions. While on paper this seems like a material increase in capital standards, the 6.5 equity to assets under Section 165 of the Act is below the tier-I capital ratio for U.S. banking firms over the past two decades. Even during the financial crisis tier-I capital for the industry never fell below 10 percent of assets. Bank of America which required a second capital infusion under the Troubled Asset Relief Program (TARP), would have exceeded the minimum 6.5 capital standard at the end of 2008 without the TARP infusions. Leveraging standards are likely to fail because they are based on book value of capital and not market values. The average loss on assets for banks closed from 2007 through 2009—despite the presence of prompt corrective action provisions which also relied on book capital valuations under the Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA)—was around 36 percent of assets.

Resolution plans should improve the management of the systemic firms and reduce their complexity. This may indeed be happening. For instance, the number of CitiGroup's nonbank subsidiaries fell from 1378 at the end of 2012 to 993 currently. Part of this decline was due to a decline in foreign nonbank subsidiaries from 375 to 322 over the same time period. Properly implemented, these "funeral plans" should improve the management of systemic firms by having management explicitly consider worst-case scenarios. These plans should provide financial market supervisors a blueprint on how to dismantle a systemic company, including which financial markets might be affected by the demise of the firm thus allowing for a more orderly resolution of the firms. Taking a more macro view of these plans, financial market supervisors can compare plans across the major systemic firms. The macro view of the funeral plans could provide information on potential stress points in the financial system during periods of market fragility. That is how the living wills should work in principle. In practice it is too early to see if the resolution plans will have the desired impact. Beyond the review of submitted plans for their compliance with the final rule adopted by the Federal Reserve and FDIC, these two supervisory agencies need to conduct audits of these plans, analogous to the stress tests for capital planning, to determine their feasibility.

Limits on short term debt authorized under Section 165 are being implemented as part of the liquidity requirements under the Basel III international capital requirements. Specifically they would be embodied by the Net Stable Funding Ratio, one of the two Basel III liquidity ratios (the other being the liquid asset ratio). Minimum requirements for liquidity should help improve financial system stability and

the resiliency of individual financial companies. Whether the Basel III approach to liquidity is the economically most desirable way to regulate liquidity is something that needs careful study.

The annual Comprehensive Capital Analysis and Review (CCAR) involves stress tests of systemic financial companies and possibly is the most important of the Section 165 reforms. It is the closest thing to assessing systemic institution solvency on a market value basis. Care must be taken that stress scenarios are calibrated over a sufficiently long period of financial history to ensure the results remain meaningful as the 2007–2009 financial crisis gets farther back in our rearview mirror. With the implementation of the CCAR it is unclear that the CCAR coupled with a straight leveraging ratio would not be sufficient and, hence, that model-based capital requirements as in Basel II and III are no longer necessary. [9]

Dodd-Frank's Title II Orderly Liquidation Authority

Orderly liquidation authority (OLA) under Title II of Dodd-Frank is a misnomer. The character of this new resolution authority is not new. It is modeled after and extends the bridge bank authority created by the Competitive Equality Banking Act (1987). Experience suggests that the expectation is restructuring and reorganization, with liquidation being the last resort. The resolution powers under Title II of Dodd-Frank also incorporate features of the Bankruptcy Code. Two general observations about OLA: First, the main use of OLA is likely to be to handle the failure of a large bank holding company. The prospect of a disorderly resolution of the parent holding company and its nonbank subsidiaries under bankruptcy was a source of systemic uncertainty prior to Dodd-Frank. Second, there are efficiencies in having a single entity, the FDIC, handle both the bank and nonbank parts of the estate of a bank holding company.

In Title II of Dodd-Frank Congress grants the FDIC the ability to impose a one-day automatic stay on qualified financial contracts (QFC), allowing it time to decide which contracts to bring into the bridge institution and which ones to place into part of the estate to be liquidated. This 1-day stay can effectively be a 3-day stay if the resolution is triggered on a Friday. Cherry picking of contracts is reduced by requiring all the contracts of a single counterparty be treated the same way. Congress should revisit the safe-harbor provisions for QFCs passed as part of the 2005 bankruptcy reforms. I believe the collateral runs by QFC counterparties on Bear Stearns and Lehman Brothers are an unintended consequence of the special treatment of QFC counterparties in bankruptcy. A limited stay and the anti-cherry picking provisions of Title II should be incorporated into the Bankruptcy Code.

It is curious that the firms exempt from bankruptcy are not subject to OLA, in particular insurance companies. AIG and Prudential have been designated as systemically important nonbank financial firms and MetLife is a bank holding company. Hence, major parts of three large systemically important financial institutions cannot be resolved under OLA, an important gap in the coverage of this authority.

Another gap in OLA is it does not extend to the foreign activities of systemically important financial firms. So international subsidiaries of systemic banks and nonbank subsidiaries of foreign banks in the U.S. complicate the resolution of these companies and remain a source of systemic importance. One might observe the movement of activities off-shore in response to OLA. A possible example of such regulatory arbitrage is the growth of CitiGroup's foreign nonbank assets. CitiGroup as a whole grew 1.60 percent from the end of 2012 through the first quarter of 2014. Its nonbank assets grew at a rate of 8.60 percent over the same period while its nonbank foreign assets grew at a rate of 29.25 percent. The reason for CitiGroup's shifting of assets offshore is unclear. However, it is consistent with regulatory arbitrage in response to OLA.

Additional Steps Needed To Address Systemic Risk

Systemic importance reflects constraints faced by financial market supervisors in enforcing timely closure rules. It doesn't matter what powers Congress gives financial supervisors to conduct orderly resolutions of financial companies if regulators remain reluctant to use them. A major step forward to limiting systemic importance (ending too big to fail) is requiring financial system supervisory agencies to develop and commit to contingency plans akin to the firm's living wills for handling the failure of one or more systemically important financial institutions. These plans should contain a series of options, actions taken to contain systemic spillovers, with blanket guarantees of all creditor/counterparty claims to be, without exception, the last op-

[9] A sentiment expressed in a recent speech by Federal Reserve Board Governor Tarullo. See p. 15 of the Governor Tarullo's speech, which can be found at *http://www.federalreserve.gov/newsevents/speech/tarullo20140508a.pdf.*

tion on the list.[10] Scenario analysis should be used to test and refine these disaster plans. Much as the intent of Section 165 resolution planning by systemically important firms is intended to promote the orderly resolution of these firms (whether through bankruptcy or FDIC receivership), supervisory disaster plans should allow for resolution of systemic firms with the least impact on long-term incentives facing these firms.

Dodd-Frank was hailed by its drafters as the antidote to Too Big to Fail. While provisions in this important reform legislation move us towards the goal of reining in the effects of systemic importance in the financial system, much remains to be done.

PREPARED STATEMENT OF ROBERT DEYOUNG

CAPITOL FEDERAL DISTINGUISHED PROFESSOR IN FINANCIAL MARKETS AND INSTITUTIONS, UNIVERSITY OF KANSAS SCHOOL OF BUSINESS

JULY 16, 2014

Thank you for the opportunity to address the Committee this morning. The Dodd-Frank Act contains many well-considered prudential standards aimed at reducing the systemic risk of U.S. financial institutions and by extension the systemic risk of the U.S. financial system. Some of these safeguards tighten up existing prudential standards, while others impose brand new prudential standards. These measures touch on nearly every risk function at modern banking companies, and the list is a long one.

From my perspective, these measures can be dividing relatively neatly into two separate categories.

On one side we have ex ante measures that try to limit banks' exposures to and/or contributions to systemic macroeconomic events. Some salient examples include higher capital and liquidity ratios aimed at making bank balance sheets more resilient to systemic events, and regulatory stress tests designed to monitor the resiliency of bank balance sheets. On the other side we have ex post measures that try to limit the amplification of systemic events (contagion) caused when banks default on their financial obligations to creditors, borrowers, other banks or financial counterparties. This approach centers on the FDIC's orderly liquidation authority, which is complemented by new stores information made available to the FDIC via resolution plans (living wills) and price discovery via exchange traded derivatives positions.

It is my observation that we pay most of our attention to the ex ante systemic risk prevention measures—i.e., setting rules and limits for banks—and we tend to have relatively less confidence in ex post measures to contain systemic risk. The explanation for this, I think, is two-fold. First, we understand intuitively that for every dollar of risk that we can prevent beforehand, we will have one less dollar of risk to contain afterwards. And second, we are skeptical that regulators will take strong actions to seize and liquidate large insolvent banks during a deep recession or financial crisis. Given our intuition and our skepticism, we tend to stress ex ante risk prevention.

Minimum equity capital standards are the backbone of our ex ante risk prevention framework. The idea is that by increasing a bank's capital buffer, it will have enough resources to continue operating during an economy wide financial event and to emerge from the crisis financially solvent. But such a world requires extremely high levels of bank capital. My research (with Allen Berger, Mark Flannery, David Lee, and Ozde Oztekin) shows that in 2006, the average U.S. commercial banking company had nearly double the risk-weighted capital ratios necessary to be deemed well-capitalized by bank regulators, and that 95 percent of all banking companies cleared the adequately capitalized threshold by at least 300 basis points. As we know, these outsized stores of equity capital were not large enough to prevent hundreds of bank insolvencies in the years that immediately followed. The lesson here is that relying on ex ante regulations to reduce bank failure risk—whether this means more capital, more liquidity, more lending restrictions, etc.—will impose nontrivial costs on banks, and these costs will in turn result in nontrivial reductions in financial services.

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[10] For a discussion of contingency or disaster planning see, Joseph G. Haubrich, James B. Thomson, and O. Emre Ergrungor, "Central Banks and Crisis Management", Federal Reserve Bank of Cleveland 2007 Annual Report and Edward J. Kane, 2001. "Using disaster Planning To Optimize Expenditures on Financial Safety Nets", *Atlantic Economic Journal* 29(3): 243–253.

In the shadow of the financial crisis, this may seem like a wise tradeoff—less lending and slower economic growth in exchange for a reduction in the severity of the next systemic financial event. But the orderly liquidation powers in Dodd-Frank provide us with an historic opportunity to avoid having to accept this tradeoff. OLA should allow us to not only limit the contagious after-effects of a systemic crisis, but also to establish a newly credible regulatory regime devoid of the too-big-to-fail that have for so long fostered systemic risk in our financial system.

Indeed, this is a big claim. But the economic story is straightforward: when investors become convinced that large complex banks will be seized upon insolvency—with shareholders losing everything and bondholders suffering losses—then credit markets and equity markets will more fully price bank risk-taking; profit-seeking banks will then face clear incentives to reject high-risk investments ex ante.

The political story, however, is far from straightforward. OLA requires bank regulators to credibly establish that they can and will seize, unwind and eventually liquidate large complex insolvent banks. The FDIC's "single point of entry" plan for implementing OLA is a workable plan. Nevertheless, in my discussions with scores of banking and regulatory economists across the U.S., I meet with a near uniform skepticism that the FDIC will be permitted to exercise its resolution authority during a financial crisis in which multiple large banking companies are nearing insolvency. Essentially, their belief is that the deeper is the financial crisis, the greater is the probability that OLA will be suspended.

In my opinion, the most important actions that Congress and the Administration can take to limit systemic risk in the U.S. financial system is to strongly and repeatedly enunciate their support of OLA and to pledge that they will not stand in the way of its implementation during a deep financial crisis. Our banking system is most effective when scarce economic resources are moved from poorly managed banks to well-managed banks. Hence, we don't want a banking system that is devoid of bank failure. Rather, we want a banking system that is resilient to bank failure. OLA is the key to this resiliency.

Thank you for your time this morning. I hope that my remarks have been useful. I look forward to your questions.

PREPARED STATEMENT OF PAUL H. KUPIEC

RESIDENT SCHOLAR, AMERICAN ENTERPRISE INSTITUTE

JULY 16, 2014

Chairman Brown, Ranking Member Toomey, and distinguished Members of the Subcommittee, thank you for convening today's hearing, "What Makes a Bank Systemically Important?" and thank you for inviting me to testify. I am a resident scholar at the American Enterprise Institute, but this testimony represents my personal views. My research is focused on banking, regulation, and financial stability. I have years of experience working on banking and financial policy as a senior economist at the Federal Reserve Board, as a Deputy Director at the IMF and most recently for almost 10 years as Director of the FDIC Center of Financial Research where I served a 3-year term as chairman of the Research Task Force of the Basel Committee on Bank Supervision. It is an honor for me to be able to testify before the Subcommittee today.

I will begin with a high-level summary of my testimony:

- There is a trade-off between financial intermediation and economic growth. When prudential regulations reduce financial intermediation, they will restrict economic growth. The Dodd-Frank Act (DFA) does not recognize this trade-off.
- The DFA does not define systemic risk, and this ambiguity allows regulators wide discretion to interpret DFA new DFA powers.
- When designated nonbank financial firms, DFA criteria is unclear. Should the firm be designated if its isolated failure causes financial instability, or is the criterion that the firm's failure in the midst of crisis and many other financial failures will cause financial instability? These two cases represent very different standards for designation.
- Because DFA assigns regulators with the (impossible) task of ensuring financial stability without recognizing and limiting regulators' ability to slow economic growth by overregulating the financial system, DFA builds in a bias toward overregulation of the financial system.
- DFA gives regulators many powers to meet vague objectives. There are few controls over the exercise of regulators' powers and extremely limited ability to appeal regulatory decisions to judicial review. In many cases these regulatory

powers can be exercised arbitrarily resulting in limiting or even canceling investor property rights without compensation or due process.

- Designating bank holding companies larger than $50 billion for enhanced prudential supervision and regulation is arbitrary and a clear case of over regulation.
- The imposition of explicit enhanced prudential regulations for the largest institutions creates a two-tiered system of regulation that will have long run negative implications for the structure of the financial industry.
- The provision of enhanced prudential power to limit the use of short-term debt does not recognize that a substantial finance literature finds that the use of short-term (uninsured) debt is a method investors use to control risk-taking by borrowers. Short-term debt is cheaper, in part, because of this risk control mechanism and the imposition of binding short-term debt restrictions will lead to higher borrowing costs.
- Mandatory Board of Governor stress tests have many negative side effects. They involve highly intrusive and detailed modeling of individual bank operations. Stress loss estimates are not the output of pure modeling exercises, but loss estimates depend to a substantial degree on judgments made by the Board of Governors. Along with enhanced prudential regulations for the largest institutions, the stress test process creates investor perceptions that the largest institutions are too-big-to-fail. Since the historical track record of stress-test based regulation is checkered at best, it is likely that there may be a time when the Board of Governors has the largest financial firms fully prepared for the wrong crisis.
- A Title II resolution using the FDIC's single point of entry (SPOE) strategy does not fix the too-big-to-fail problem. In order to keep subsidiaries open and operating to avoid creating financial instability, in many cases, SPOE will require the extension of Government guarantees that are far larger than those that would be provided under a bankruptcy proceeding and Federal Deposit Insurance Act (FDIA) resolution.
- The Title II and SPOE create new uncertainty regarding which investors will be forced to bear losses when a bank holding company fails.
- When Title II is used on a bank holding company because a subsidiary bank failed, it creates a conflict of interest between contributors to the deposit insurance fund and contributors to the orderly liquidation fund.
- Title II and SPOE alter investor property rights without prior notice, compensation, or due process and with little scope for judicial protection.
- Contingent capital is a more attractive means for address the consequences of the distress of a large and important financial intermediary. Its benefits are even more apparent in a crisis, when multiple financial institutions may be in distress.
- The FDIA resolution process should be improved to avoid creating too-big-to-fail banks. Title I orderly resolution plan powers can be used to require the FDIC to plan to break up large institutions in an FDIA resolution rather than use a whole bank purchase. This may require legislation to amend the FDIC's least cost mandate if favor of requiring large institutions to be broken up in the resolution process even if it imposes a larger loss on the insurance fund.
- Improvements in the FDIA resolution process can be a substitute for mandatory enhanced supervision and prudential standards that apply to many institutions that exceed the Section 165 size threshold.

I. Financial Intermediation, Economic Growth, and Systemic Risk

It is has long been recognized that banks play a special role in capitalist economies. Today, the idea that "banks are special" is such a cliche that many may have forgotten what underlies this belief. Since Government regulations are designed around the idea that banks are special, it is useful to briefly review the economic functions of banks and highlight the link between bank regulation and economic growth.

In many capitalist economies, banks are the only intermediaries that collect consumer savings and channel them into private sector investments. In bank-centric economies, if banks make sound investment decisions, the economy grows, banks profit, and consumers earn interest and their deposits are safe. If banks make poor investment choices, their investments fail, consumers lose their savings and economic growth plummets.

Some economies, including the U.S. economy, also benefit from nonbank financial intermediation, sometimes called "shadow banking." Nonbank financial intermediation occurs when consumers channel their savings into private sector investments without the intermediation of a bank.

In the most common form of nonbank intermediation, firms issue publicly traded securities that consumers can purchase and own directly, but savers may also purchase and own securities indirectly through collective investment vehicles like mutual funds, insurance companies, private equity, hedge funds, or other nonbank financial institutions. These intermediaries along with broker-dealers are part of the financial infrastructure that makes it possible for consumers to purchase and sell securities and thereby channel their savings into investments without using the banking system as the investing intermediary.

The ability to invest saving using nonbank forms of intermediation generally gives savers more control over their investment decisions as well as the ability retain a larger share of the profit (or the loss) generated by their investment decisions. Nonbank intermediation is typically a cheaper source of funding for firms that have achieved a good reputation among investors by repeatedly honoring the financial claims they have issued in the past and through public disclosures that help to make their operations and financial condition as transparent as possible to investors.

Banks also play a key role in creating the supply of money that consumers use as a store of value and medium of exchange. Transferable bank deposits are an important part of the money supply. Money is an extremely important economic invention. It allows consumers to specialize in their most productive labor activity in exchange for receiving compensation in the form of a widely accepted medium of exchange (money) they can use to purchase the goods and services they choose to consume or to save using bank or nonbank intermediation.

Without money, consumers would have to barter. Without money, consumers must find someone offering the goods or services they want, and at the same time, the counterparty must want the output their own labor services. Making an investment is even more difficult because a saver must also trust that the counterparty will be willing and able to provide the promised service in a future period. When an economy lacks money, it must satisfy "a double coincidence of wants," and economic output and growth are severely limited.

Money facilities trade, but it is costly for firms and consumers to hold money. Cash pays no interest. Bank deposits offer minimal yield, and banks may impose costs to transfer deposit balances. If firms and consumers can find ways to minimize their holding of cash and bank deposits, they are better off because they have more control over where their savings are invested, they have the potential to earn higher returns, and they save on bank transactions costs. However, because transactions in real goods and services require the transfer of cash or bank deposits, firms and consumers either need to own money balances before transacting or be able to borrow them from somewhere. But most firms and consumers do not have established reputations that allow them to borrow based only on their pledge to repay in the future.

The market solution to the borrower reputation problem is to use liquid long-term debt securities issued by reputable firms as collateral for borrowing.[1] Liquid long-term debt securities that are perceived to have stable values that are largely insensitive to new information are ideal collateral for borrowing. These securities can be traded among savers without the need to spend a large amount of effort to collect information and evaluate the likelihood that they will maintain their value in the near term. Firms and consumers may purchase these securities not for their ultimate cash payoffs, but to use them to secure borrowing when they are unable to borrow based on their promise of repayment alone.

Securities that are widely perceived as having a stable predictable value function as so-called inside-money. They are held by firms and consumers as a temporary store of value in lieu of bank deposits because they offer higher yields and can be quickly converted into cash and deposit money at minimal cost. When firms or consumers need to transact, they exchange the securities for cash. A real world example of inside money is the market for repurchase agreements for Government, agency and high-quality structured and corporate credits. The stock of inside money is an important component of the economy's effective money supply.

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[1] Other securities can also be used as collateral but high quality information insensitive long-term debt securities like U.S. Government securities and highly rated corporate debt are preferred collateral.

Defining Systemic Risk

Against this background, it is useful to consider a definition for systemic risk. My preferred definition of systemic risk is that it is the possibility that a disruption in the financial intermediation process could cause a significant reduction in real economic growth.

In the simple stylized economy have I described in the prior section, financial intermediation can be disrupted in two ways. The first is that the failure of a financial intermediary or many financial intermediaries will disrupts financial intermediation. To take an extreme example, if the economy has only a single bank and it fails, consumers can no longer use it to channel their savings into investments, its bank deposits are no longer acceptable as money, and economic growth will clearly decline.

The nonbank intermediation process can also be disrupted and cause systemic risk. The failure of a key intermediary could make it very difficult for savers to purchase or sell securities. An important failure or series of intermediary failures could cause important disruptions in this form of intermediation.

Nonbank intermediation can also be interrupted without an intermediary failure. Events or new information can make savers reluctant to purchase existing securities making it difficult or impossible for investors to sell the securities they own. When the value of existing securities is materially diminished, the agents holding securities for use as collateral have a diminished ability to borrow or may be unable to borrow at all and this will restrict their ability to transact in goods and services.

The Dodd-Frank Act and Systemic Risk

The Dodd-Frank Act uses the phrase "systemic risk" 39 times in directing the financial regulatory agencies to identify, mitigate, and minimize "systemic risk." But the Dodd-Frank Act never defines systemic risk. Because the term is ambiguous, the law allows the regulatory agencies wide discretion to interpret the powers it conveys. The DFA directs agencies to draft and implement rules to control and minimize "systemic risk" without requiring the agencies to identify specifically what they are attempting to control or minimize.

Another troubling aspect of the Dodd-Frank Act is that the law does not recognize that rules and regulations that reduce systemic risk will have an impact on economic growth. The necessity of such a relationship is easiest to see in a bank-centric economy. If systemic risk reduction is accomplished by imposing regulations that limit the risk of bank investments, regulation will also limit economic growth. A fundamental principle of finance is that risk and return are positively related. Regulations that limit the risk of bank investments, if they are effective, will necessarily constrain banks to low-risk, low-return investments. Very stringent bank regulation may ensure that bank deposits remain safe, but they will also force banks to channel consumer saving into low-risk, low-return investments, and the economy will grow more slowly than it otherwise would.

The Dodd-Frank Act takes a very naive approach toward controlling systemic risk. Instead of clearly identifying what it is trying to accomplish and legislating appropriate measures, it defines financial stability as the absence of systemic risk and grants regulators an extensive set of new powers while assigning them the responsibility of ensuring U.S. financial stability.

One way to ensure financial stability and remove systemic risk is to restrict financial intermediation. If there is little or no financial intermediation, then it cannot be a source of systemic risk. Unfortunately this solution has very serious consequences for economic growth.

An alternative solution is to restrict the kinds of financial intermediation that cause systemic risk. This is the Dodd-Frank approach. It requires regulators to separate "good" financial intermediation from "bad" financial intermediation and to impose rules to stop bad intermediation. The problem is that is unclear that any person or agency has the capacity to distinguish good intermediation from bad intermediation, and stopping intermediation has negative consequences for economic growth. While this problem is inherent to some degree in any form of financial regulation, Dodd-Frank grants regulators extensive new powers to identify and stop "bad" financial intermediation as the means to achieve an ultimate (and impossible goal) of ensuring financial stability without any requirement that regulators recognize the implicit cost on economic growth.

Post Dodd-Frank, if we do not achieve financial stability, then easiest conclusion is that the regulators failed because they did not stop enough "bad" intermediation since regulators had been given sweeping powers to stop bad intermediation. Whether the conclusion is true or not does not matter. The fact that the conclusion will be made by some builds in a clear bias encouraging regulators to overregulate

in their pursuit of financial stability. Clear constraints on regulatory power are necessary, or regulators will overregulate and economic growth will suffer.

I will now discuss in detail some of the specific issues that were raised in the invitation to testify at today's hearing.

Section 113 Designation

Section 113 of the DFA provides the FSOC guidelines that should be followed when designating nonbank financial firms to be supervised by the Board of Governors and subjected to heightened prudential standards. The standard for designation is "if the Council determines that material financial distress at the U.S. nonbank financial company, or the nature, scope, size, scale, concentration, interconnectedness, or mix of the activities of the U.S. nonbank financial company, could pose a threat to the financial stability of the United States."

Issues Associated With Section 113

Section 113 includes a laundry list of factors that the Council can consider in making the designation, but the language merely identifies factors the Council can consider; it does not include any quantitative standards to guide the designation process. The characteristics that may be considered for designation are very broad, but without quantitative guidance, the guidelines are arbitrary and impose little rigor on the designation process. For example, the guidelines never mention whether the firms' distress should be considered in isolation in an otherwise well-functioning financial market, or whether the threat to financial stability engendered by firm distress should be assessed in the context of a dysfunctional financial market under the assumption that many other banks and nonbank financial institutions are also failing. Clearly, the financial stability consequence of a firm failure in an otherwise quiescent financial market is far less severe than a failure under stressed financial market conditions.

In practice, Section 113 guidelines merely restrict the FSOC's designation discussion and the case (if any) it makes to support its decision, but the designation outcome is completely governed by the Council vote. Moreover, since the directive lacks objective standards for designation, the criterion used to designate firms will almost certainly across administrations as different politically appointed officials are represented on the Council. Without objective minimum quantitative standards for designation, there is little scope for continuity over time or for a designated firm to use data, analysis, or case precedent to overturn an opinion rendered by the Council.

One especially telling feature of Section 113 is that the designation guidelines do not require the Council to simultaneously recommend specific heightened prudential standards for the designated firm to mitigate systemic risk or consider whether the heightened prudential standards that otherwise apply (set by the Board of Governors) will reduce the probability that the firm's financial distress would pose a material threat to the financial stability of the United States. Indeed all of the Council's designations to date have been made without any Council recommendations for specific heightened prudential standards and before the Federal Reserve has revealed how it will supervise the nonbank financial institutions or what heightened prudential standards the designated firms must satisfy.

There is no requirement in Section 113 that the Council specify what specific characteristics or activities of the nonbank financial firm lead the Council make a designation. The justifications for all of the Council's designations made thus far are vague and lack any specific information that would inform the designated firm or other potential designees of the actions they might take to avoid designation. Should the council take an interest in designating an institution, there is little or no objective information the institution might use to proactively modify its operations, capital, or organizational structure to reduce its "systemic risk" to acceptable levels.

In summary, the legislation that guides the designation process for nonbank financial institutions gives financial firms little or no ability to protect themselves against an arbitrary designation by the Financial Stability Oversight Council. Moreover, the criterion used to designated financial firms will likely vary as administrations and their politically appointed FSOC representatives change. Since designation has the potential to materially change an institution's regulatory framework as well as the potential to restrict its investments options and business processes, the designation process should be amended to include minimum quantitative standards for designation and a requirement that the Council credibly establish that Federal Reserve supervision and the enhanced prudential standards that will apply reduce the potential for the firm's distress to create financial instability.

Sections 115: FSOC Recommendations for Enhanced Regulation

Section 115 empowers the FSOC to recommend specific enhanced prudential standards for designated financial institutions. The FSOC has authority to rec-

ommend that the Board of Governors impose heightened prudential standards on designated firms. These recommendations can require firm-specific standards and may include enhanced leverage ratio and risk-based capital requirements, liquidity requirements, short-term debt and concentration limits, contingent capital requirements, enhanced risk management requirements, resolution planning and credit exposure reports, and enhanced public disclosure.

Issues Relate to Section 115 Powers

Section 115 includes no guidelines or requirements to constrain the heightened prudential standards that the FSOC may recommend. Indeed Section 115 does not even discuss a process that must be followed to issue a recommendation. For example it is unclear whether the issuance of an FSOC recommendation requires an FSOC vote or the voting majority need for approval. Section 115 lacks any requirement that the FSOC support its recommendation for heightened prudential standards with objective evidence that shows that the recommended standards will successfully limit the firm's ability to destabilize the U.S. financial system should the firm become distressed.

Sections 121: FSOC Discretion To Grant Board of Governors Additional Corrective Powers

Section 121 gives the Board of Governors the authority to request FSOC approval for additional powers that enable it to restrict the activities of a specific designated firm including preventing the institution from entering into mergers, barring it from specific investment activities or offering specific financial products, requiring changes to its business practices, and even requiring divestures if the Council determines that the institution poses a grave threat to U.S. financial stability that cannot be mitigated by other means.

The primary issue raised by Section 121 powers is that Section 121 does not require that FSOC produce specific evidence to demonstrate that its restriction recommendation will curtail systemic risk or improve the stability of U.S. financial markets. Section 121 requires no objective criteria to limit or constrain the FSOC's powers and protect the property rights of the designated financial firm's shareholders and creditors.

Section 165: Enhanced Supervision and Prudential Standards

Section 165 directs the Board of Governors to establish heightened prudential standards that apply to bank holding companies in excess of $50 billion and nonbanks financial firms designated by the Council. The Board of Governors is required to set heightened prudential standards for risk-based capital requirements, liquidity requirements, concentration limits, risk management requirements and resolution plans and credit exposure reports. The Board of Governors is also empowered to set standards for short-term debt limits, contingent capital requirements, enhanced public disclosure, or other standards the Board of Governors deems appropriate to mitigate or prevent risks to financial stability that may arise from the distress of a designated company.

Section 165 also requires the Board of Governors to administer annual stress test to bank holding companies with consolidated assets in excess of $50 billion and designated nonbank financial institutions and to publicly report on the results. The Board of Governors may use the results of the stress test to require designated institutions to modify their orderly resolution plans. In addition, Section 165 requires that all financial institutions or holding companies larger than $10 billion with a primary Federal regulator must conduct annual stress tests similar to the Board of Governors stress test and report the results to their primary Federal regulator.

Section 165 also provides the Board of Governors and EDIC with the powers to impose heightened prudential standards on designated firms that do not submit resolution plans that provide for a rapid and orderly resolution under Chapter 11 Bankruptcy in the event the designated firm suffers material financial distress or failure.

Issues Raised by Section 165 Requirements

When does a bank become systemic and require heightened prudential standards?

There is no science evidence that supports a threshold of $50 billion for subjecting bank holding companies to heightened prudential standards. While the factors that are mentioned in Section 165 as potential indications that an institution may be a source of systemic risk—size, leverage riskiness, complexity, interconnectedness, and the nature of the institutions financial activities—are reasonable features to consider, there is no economic research that supports the use of a specific thresholds

for any of these individual factors to indicate a need for heightened prudential regulation.

As of March 2014, the U.S. has 39 bank holding companies with consolidated assets in excess of $50 billion. Of these, 4 had consolidated assets greater than $1 trillion, 4 had assets between $500 billion and $1 trillion (and none of the 4 are primarily commercial banks), 8 had assets between $200 and $500 billion (5 of these are specialty banks), and 23 had assets less than $200 billion. Of the 23 banks with under $200 billion in consolidated assets, most are almost exclusively involved in commercial banking and many might be characterized as "regional" banks.

There are huge differences in the characteristics of the 39 bank holding companies that are subjected to enhanced prudential supervision by the $50 billion limit imposed under Section 165. Very few of these institutions can truly be considered systemically important. Moreover, for the vast majority of these institutions, their failure could be handled using an FDI Act resolution if the appropriate planning were undertaken using Title I orderly resolution planning authority. There should be no need to invoke Title II. Thus, in my opinion, the $50 billion threshold set for enhanced prudential standards in Section 165 has erred on the side of excessive caution.

Enhanced capital and leverage requirements for designated bank holding companies

The enhanced bank capital and leverage standards required by Section 165 have been enthusiastically supported by many economists and policy makers, and I agree that higher bank capital requirements are appropriate for institutions that are truly systemic. But the class of institutions that is truly systemic is far more restricted than the class prescribed in Section 165.

The enhanced capital and leverage requirements that have been implemented by the Board of Governors are associated with the U.S. implementation of Basel III. These requirements have been designed for use by banks and bank holding companies. They are not appropriate for nonbank designated firms who are also subject to the heightened prudential requirements under Section 165.

Enhanced capital and leverage requirements for designated nonbanks

Section 165 seems to give the Board of Governors the discretion to modify these enhanced prudential requirements and tailor them to more closely fit the businesses of nonbank designated firms. Thus far, the Board of Governors has not modified any of these enhanced prudential standards and argued that the Collins amendment imposes Basel I capital requirements as a minimum standard on all designated companies. Legislation clarifying that the DFA Collins amendment does not apply to insurance companies has passed the Senate and been introduced in the House of Representatives.

Still, the issue of the applicability of Section 165 enhanced prudential standards highlights fundamental weakness in the drafting and implementation of the Dodd-Frank Act. The Financial Stability Oversight Council has designated a number of nonbank financial institutions without either knowing what enhanced prudential standards will apply or assuming that nonbanks will have to meet the same standards as bank holding companies. In either case, it is doubtful that the Council's deliberations considered how designation would improve U.S. financial sector stability.

A two-tiered system of bank regulations will stimulate the growth of large institutions

A second issue raised by the imposition of enhance prudential standards on the largest institutions in the banking system is that a two-tiered system of regulations officially recognizes two distinct types of banks: (1) those that are small and can be allowed to fail without social cost; (2) those that are very large and create large failure costs that must be avoided by stricter regulation. Under this system, the smaller banks may benefit from less burdensome regulation. But investors understand that these institutions will be allowed to fail and softer regulations seemingly makes their failure more likely. In contrast, large banks have added regulatory burden, but they also have been explicitly identified by the Government as so important that they need additional regulation to ensure their continued existence.

The differences in capital and leverage regulations between small and large banks mandated by Section 165 and implemented as Basel III are mechanical and may not be the decisive factor that differentiates the largest banks. However, the Board of Governors stress test and the resolution plans (joint with the FDIC) mandated by Section 165 include very intrusive correctional powers where the Fed or the FDIC can require extensive operational changes or additional capital at the largest institutions. For the largest institutions, post Dodd-Frank, it is not hyperbole to say

the Board of Governors (and to a far lesser extent the FDIC) now have a direct and important role managing the largest bank holding companies.

When the Government is intimately involved in planning and approving large bank operations, why wouldn't investors believe that their investments were safer in the largest banks? The enhanced prudential standards imposed by Section 165 contribute to investor perceptions that the largest banks are too big to fail.

Over time, the two-tiered approach to banking regulation will erode the ability of small banks to compete for uninsured deposits and reduce their ability to issue unsecured liabilities. Since Dodd-Frank also prohibits the use of trust preferred securities, small bank options to fund growth beyond their retail deposit bases will be severely limited. As a consequence, Section 165 requirements are likely to encourage additional consolidation in the U.S. banking system as large deposits and assets further migrate into the institutions that are required to meet enhanced prudential standards.

Limits on the use of short-term debt

Section 165 short-term debt limits give the Board of Governors the power to require designated financial firms to extend the maturity of their funding debt (except for deposits, which are exempted from the rule) and restrict the use of short-term collateralized funding including the use of repurchase agreements. Curiously, the deposit exemption is not restricted to fully insured deposits. Banks may issue uninsured deposit without restrictions even though this source of funding is among the most volatile and the first to run.

Short-term debt restrictions limit one of the most visible symptoms of a financial crisis—the inability of financial firms to roll-over their maturating debt. They try to alleviate this problem by requiring that firms have, on average, a longer time buffer before they face the inevitable maturing debt roll-over. But all going-concern debt eventually becomes short-term and must be refinanced.

The idea for short-term debt restrictions is also popular in many postcrisis academic papers that argue that there is an underlying market failure that can be fixed by short-term debt limits. Banks gain private benefit from funding short term because they have a monopoly on issuing demandable deposits and an implicit guarantee advantage in issuing other short-term deposit-like liabilities. The bank benefit is that short-term funding is usually the cheapest source of finance.

The market failure arises when there is a liquidity shock and investors for some reason become unwilling to roll-over banks' short-term liabilities and banks are forced to sell assets to meet redemption requirements. Because many banks are using "excess" short-term funding because of the apparent interest cost savings, they must all shed assets, and this depresses the market price of assets, causing a so-called "fire-sale" decline is asset prices. The decline is asset prices must be recognized by all institutions, even ones that may not be funding with excess short term-debt. And so the lesson from these models is that "asset fire sales" are an externality attached to the overuse of short-term debt, and if regulators restrict bank's ability is fund short term, then the externality can be controlled. Well maybe, but there will be real economic costs that are not recognized in these models.

First, all debt eventually become short term, so limiting the amount of banks and other financial firms short term debt does not remove the issue that all debt must eventually be rolled over regardless of maturity. The economic models that demonstrate "fire sale" externalities are highly stylized and static. In these models, if banks fund long term (in the third and final model period) they do not have to refinance in the second period when the fire sale occurs. By forcing banks to issue claims in the "last" period of the model, the claims magically never have to be refunded in the horizon of interest. While this solves the fire sale problem in these economic models, it does not fix the real life problem that seemingly far-off future periods have a habit if turning into tomorrow, and debt that was once long-term, becomes short term and must be rolled over.

The "fire sale" models of short-term debt also ignore a large literature in corporate finance that argues that short-term debt is cheaper because it is a mechanism for controlling the risk that the managers of a financial institution (or any corporation for that matter) take. If the manager of a corporation is forced with the discipline of continuously rolling over a significant share of the corporation's funding, then the manager must ensure that the corporations finances are always sound and its debt holders are never surprised by the firm's is investments.

Short-term debt is a bonding device. The need to roll over debt helps to keep the manager from investing in longer-term risky investments with uncertain payoffs unless debt holders are fully aware and approve (i.e., are already compensated) for such investments. If the manager conveys that the firm investments in short term and relatively safe activities, should debt holders learn otherwise, the manager's

debt holders may refuse to roll over the debt at existing rates and the manager will be forced to abandon longer term investments before they can (possibly) produce the desired high payoff.

When short-term debt controls the risks the manager takes, investors can charge lower rates. Thus, short-term debt provides cheaper funding in part because it limits borrower risk-taking. Indeed academic many papers argue that, before deposit insurance, banks funded themselves with demandable deposits because depositors required the demandable feature to discipline the bank, since the soundness of the bank's assets could not otherwise be verified by depositors. Deposit insurance largely destroys the risk control benefits of demandable deposits. I say largely because there is evidence that some insured deposits still run.

Thus, there are sound economic reasons for arguing that short-term debt restrictions on designated financial firms may be less advantages than they might seem. Short-term (noninsured deposit) debt controls risk taking, and the current wave of theoretical economic models that produce "asset fire sales" do not consider the risk control benefits of short-term debt. If financial firms are forced to fund themselves longer-term debt, their cost of debt will increase, and either the institutions will absorb these costs and be less profitable or pass these cost on to customers in the form of higher loan rates and lower returns on deposits. Section 165, and indeed the current wave of macroprudential economic models, do not recognize that short-term debt restrictions are likely to have real economic costs on borrowers.

Mandatory Board of Governors annual stress tests

Section 165 Board of Governor stress tests are perhaps the most problematic form of enhanced prudential supervision required by the Dodd-Frank Act. The value of these exercises for identifying and mitigating financial sector excesses is highly questionable, and yet the Federal Reserve System spends an enormous amount of resources on this activity. Indeed senior Federal Reserve officials have argued that Basel regulatory capital rules should be suspended, and the Board of Governors annual stress test should be formally recognized as the means for determining minimum capital requirements for large bank holding companies.

Aside from the confidence of senior Federal Reserve officials, there is no evidence that coordinated macroeconomic stress tests will be effective in preventing future financial crisis. Already, these stress tests have missed the "London Whale" at JPM Chase and a multibillion dollar hole in Bank of America's balance sheet. Fannie Mae and Freddie Mac both passed severe Government-designed macroeconomic stress test right before they failed in September 2008. Even before the financial crisis, many countries produced financial stability reports that included bank stress tests and none anticipated or prevented the crisis. Prior pan-European EBA stress tests failed to identify a number institutions that become problematic in short order. Based on the track record to date, stress tests have a pretty poor record for detecting "problem" institutions.

A stress-test based approach for setting bank capital has two gigantic measurement problems. First, the macroeconomic scenario must actually anticipate the next financial crisis. And secondly, regulators must be able to translate the macroeconomic crisis scenario into accurate predictions about actual bank profits and losses.

Few regulators possess the prescience necessary to accomplish this first step. Rewind your clock to 2006 and ask yourself if the Board of Governors would have used a scenario that predicted the housing crisis. It was less than 2 years away, but the Fed did not see it coming. The New York Fed's staff was publishing papers that dismissed the idea of a housing bubble and the Federal Reserve Chairman's speeches argued—worst case—there may be some "froth" in local housing markets. Even as the subprime bubble burst, the new Fed Chairman publicly opined that the economy would suffer only minor fallout.

Even if the Board of Governors stress scenario correctly anticipates a coming crisis, the crisis must be translated into individual bank profits and losses. The problem here is that bank profits and losses are not very highly correlated with changes in macroeconomic indicators. Quarter-to-quarter bank profits do not closely follow quarterly changes in GDP, inflation, unemployment, or any other macroeconomic indication. The best macroeconomic stress test models explain only about 25 percent of the quarterly variation in individual bank profits and losses, meaning that more than 75 percent of the variation in bank profit and losses cannot be predicted using GDP, unemployment, or other business cycle indicators.

Because of these measurement issues, bank loss predictions from macroeconomic stress tests have very little objective accuracy. Even using the best models, there remains a great deal of uncertainty surrounding how each bank may actually perform in the next crisis, presuming the stress scenario anticipates the crisis.

These issues are real and serious and they make macroeconomic stress testing more of an art than a science. There is no formula or procedure that will lead to a single set of stress test bank loss estimates that can be independently calculated by different stress test modelers. Thus, it is not surprising that the Board of Governors and the U.S. banks rarely agree on stress test results. The Fed uses its artistic judgment to produce large losses while the banks' aesthetics favor smaller loss estimates. Both the bank and the Fed are probably wrong, but the Fed's judgment always prevails when it comes to the stress test capital assessment.

The stress test process requires the Board of Governors to be intimately involved in modeling the operations and exposures of each large banking institution. It also requires the Federal Reserve Board to use its own judgment to set each large bank holding company's "stress tested" capital plan. What if the Board of Governors is wrong? How can they let an institution that they are essentially managing fail? When regulations get so intrusive that the regulator virtually "runs the bank," it becomes difficult for the Government to impose losses on the institution's shareholders and bondholders if the institution fails. This precarious situation could easily encourage the Board of Governors to over regulate the largest institutions to ensure that there is never a failure on its watch. This outcome is a recipe for permanently slower economic growth and stagnant financial institutions.

It may not be widely appreciated, but the coordinated macroeconomic stress test approach to regulation encourages a "group think" approach to risk management that may actually increase the probability of a financial crisis. Stress test crisis scenarios have to be specific so that banks and regulators can model the same event. Moreover, the Board of Governors imposes some uniformity in loss rates across all designated banks by using its own stress test estimates. The Board of Governors is very much like a coach or a central planner that tries to ensure some coherence in each designated firms estimates and capital plans. Unintentionally perhaps, by requiring all firms to approach the stress test problem the Board of Governors approve way, the process is encouraging all large institutions to think and operate the same way. What happens when all the largest banks are steeled against the wrong crisis scenario? Could the financial losses generated by a different an unexpected crisis actually be made worse by the coordinated stress test exercise?

The finial Section 165 issue I will discuss is related to the requirement that designated firms file an annual orderly resolution plan. Section 165 directs the Board of Governors and the FDIC to determine whether designated firms' orderly resolution plans are credible or whether they would fail to facilitate an orderly resolution of the company under title 11 of United States Code. However, Section 165 does not provide any specific guidance that constrains the agencies' judgment. There are no specific criteria specified that can be used to identify a credible plan; there are no objective standards that must be met. The credibility of a plan is entirely based on subjective judgments by the Board of Governors and the FDIC.

Title II: Orderly Liquidation Authority

Title II creates a special administrative process similar to the Federal Deposit Insurance Act (FDIA) administrative process for resolving failed banks. Title II also creates a special funding mechanism that can be used to "liquidate failing financial companies that pose a significant risk to the financial stability of the United States in a manner that mitigates such risk and minimizes moral hazard. (Sec. 204 (a))"

Title II is invoked when two-thirds of the serving members of the Federal Reserve Board and FDIC[2] board of directors make a written recommendation for the use of Title II to the Secretary of the Treasury. The recommendation must include:

- A determination that that the financial firm is endanger of default
- A determination that default under the Bankruptcy Code would have a serious destabilizing impact on the financial system
- A summary of the effect of default on financial conditions
- An assessment of the likelihood of a private sector solution
- An evaluation of why a normal Bankruptcy process would be problematic
- A recommendation for Title II actions to be taken
- An evaluation of likely impacts on counterparties, creditors, shareholders, and other market participants.

[2] If the SIFI is primarily a broker-dealer, The FDIC plays a consultative role and is replaced in its primary role by two-thirds of the sitting members of the Securities and Exchange Commission. If the SIFI is primarily an insurer, the FDIC has a consultative role and the case is made by the FRB and the Director of the Federal insurance Office.

Based on this recommendation, the Secretary of the Treasury in consultation with the President of the United States makes the final determination to use Title II powers.

When Title II is invoked, the Secretary of the Treasury notifies the distressed financial firm's board of directors that the FDIC will be appointed receiver under Title II of the DFA. Should the board of directors not consent to the appointment, the Secretary of the Treasury can petition the United States District Court for the District of Columbia for an order that appoints the FDIC as receiver. The Court has 24 hours to object to the petition as arbitrary and capricious and provide a reason supporting this determination. Faced with an objection, the Treasury Secretary can amend and refile the petition and continue this process until the Court appoints the FDIC as receiver.

Once a petition is filed, the Court must decide within 24 hours or the FDIC is appointed receiver. Once the FDIC is appointed as receiver, the special resolution process cannot be stayed by the courts. The FDIC has three years to complete its receivership duties, but the time limit can be extended to 5 years with Congressional approval.

Title II assigns the FDIC specific responsibilities that must be satisfied in the resolution process. These responsibilities are summarized in Table 1. Title II allows the FDIC to treat similarly situated creditors differently if it improves recovery values or limits disruptions to the financial system. However, any disadvantaged claimants must receive a recovery at least as large as they would receive in a Chapter 7 bankruptcy. The FDIC also has the power to charter a bridge financial institution to affect the resolution and it can make use of an Orderly Liquidation Fund (OLF) to fund the resolution. [3]

The OLF is an FDIC line of credit with the U.S. Treasury that can be used to fund Title II resolutions. The FDIC can pledge receivership assets to secure funding. Within the first 30 days of the appointment of the FDIC as receiver, Title II limits the amount of OLF funding to 10 percent of the consolidated assets of the distressed holding company as reported on its last available financial statement. After 30 days, the FDIC can borrow up to 90 percent of the fair value of the total consolidated assets of each covered financial company that are available for repayment.

To access OLF funds, the FDIC must secure the Secretary of the Treasury's approval of an orderly liquidation plan, a specific plan for the liquidation of the receivership that demonstrates an ability to amortize OLF loan balances and pay interest consistent with the repayment schedule agreement. The interest rate on the OLF loan will be set by the Secretary of the Treasury, but it must be at least as large as the prevailing interest rate on similar maturity corporate loans. [4]

Should the projected repayment schedule from the receivership be unable to discharge the OLF loan terms within 60 months of the loan origination, the FDIC must follow a prescribed assessment protocol to collect the additional funds needed to discharge the debt. In the protocol, the FDIC first recovers any additional benefits that it paid out to similarly situated creditors in order to maximize the recovery value of the receivership or attenuate systemic risk (Section 210(o)(D)). If this recovery is insufficient, the FDIC then must impose a risk-based assessment on all financial firms with consolidated assets in excess of $50 billion. Title II includes an extensive list of criteria the FDIC must consider in setting the assessment rate [5] and it requires the Council to produce a "risk matrix" for criteria that the FDIC must take into consideration when setting OLF repayment assessment rates.

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[3] The FDIC can move any assets and liabilities of its choosing from the receivership into the bridge financial companies. The bridge financial company is exempt from regulatory capital requirements and all taxes: U.S., State, county, territory, municipality, or other local taxing authority. The bridge company charter is for 2 years but can be extended to up to 5 years.

[4] The DFA says the interest rate must be at least as large as the prevailing rate on U.S. Government obligations of a similar maturity plus and interest rate premium at least as large as the different between the prevailing rate in a corporate bond index of similar maturity and the prevailing rate on U.S. Government securities of a similar maturity. The DFA does not specify the credit quality of the corporate bonds that should be used to set a lower bound on the credit spread.

[5] The criteria are given in Section 210(o)(4). Among the criteria for setting assessment rates is a particularly striking catchall criterion: "any risks presented by the financial company in the 10-year period immediately prior to the appointment of the Corporation as receiver for the covered financial company that contributed to the failure of the covered financial company (p. 1511).

Table 1: FDIC Responsibilities Under1 DFA Title II

- Manage receivership to promote financial stability, not to preserve the failed institution
- Ensure that receivership recoveries respect the following claims priority:
  a. Administrative expenses of the receiver
  b. Amounts owed the US government
  c. Employee salary and benefits
  d. Other general or senior unsecured liabilities
  e. Subordinated debt holder claims
  f. Wage & benefits of senior officers & directors
  g. Shareholder claims
- Ensure that the management responsible for SIFI distress is removed
- Ensure that board of directors of the failed institution is removed
- Prohibited from taking an equity interest in the distressed firm or any of its subsidiaries
- Manage the assets and companies in the receivership to maximize the value of the receivership consistent with maintaining financial stability
- Ensure that that the maximum liability imposed on any claimant against the receivership is consistent with the amount that the claimant would have received in a Chapter 7 Bankruptcy
- Develop a plan for repayment of any borrowings from the Orderly Liquidation Fund, including risk-based assessments of financial companies larger than $50 billion and all non-bank designated SIFIs should projections of the bridge financial entity's revenues fall short of the amount needed to repay borrowed OLA funds in full within 60 months of the date these obligations were issued.

Title II clearly states that distressed financial firms should be resolved through the normal judicial bankruptcy process unless the bankruptcy destabilizes the financial system. To increase the probability that a financial firm can be resolved through a normal bankruptcy process, DFA Title I Sec. 165 requires designated financial firms to submit annual plans that outline a strategy to affect their orderly reorganization under a chapter 11 bankruptcy. The plan must be approved by the Board of Governors and the FDIC, and should objections be raised, designated firms are required to remedy objections and the Board of Governors and FDIC have the power to require any needed changes.

The FDIC Single Point of Entry Title II Resolution Proposal

Title II creates a new Orderly Resolution Authority, assigns the task to the FDIC, and imposes some broad guidelines the FDIC must follow but it does not dictate exactly how the FDIC must resolve a company put into Title II receivership. Title II leaves the FDIC with significant discretion to manage a receivership. To provide clarity to the Title II process, the FDIC has released a proposed strategy for executing a Title II resolution. The strategy envisions taking the top holding company of the distressed financial firm into receivership. This objectives of this "Single Point of Entry" strategy (SPOE)[6] are summarized in the FDIC Federal Register release,

> The SPOE strategy is intended to minimize market disruption by isolating the failure and associated losses in a SIFI to the top-tier holding company while maintaining operations at the subsidiary level. In this manner, the resolution would be confined to one legal entity, the holding company, and would not trigger the need for resolution or bankruptcy across the operating subsidiaries, multiple business lines, or various sovereign jurisdictions. p. 76623.

Under a SPOE Title II resolution, the FDIC will be appointed receiver of the failing institution's top holding company. The FDIC will then charter a bridge financial institution, fire the existing management, hire new management, transfer all holding company assets into the bridge bank (p. 76617), and the bridge institution would function as the new top holding company. The holding company shareholders and

[6] *http://www.fdic.gov/news/board/2013/2013-12-10_notice_dis-b_fr.pdf*

most of its liabilities will remain in the receivership to absorb the failed institutions losses.

The FDIC has the power to treat similarly situated creditors of the receivership differently if disparate treatment is necessary to maximize the return to creditors left in the receivership or to maintain essential operations of the bridge financial holding company. Using this power, vendors and liabilities related to retained employees would be transferred to the bridge holding company so they could maintain continuity in essential vendor and employee services. Also, secured holding company claims would be transferred to the bridge bank along with the collateral assets.

Most of the liabilities of the distressed financial firm's top holding company would be converted into receivership certificates. Since most holding company liabilities would not be transferred into the bridge holding company, the new bridge company would be predominately equity funded. With the help of Government guarantees using the OLF if necessary, the bridge bank will issue new debt instruments and downstream the proceeds to recapitalize any subsidiaries that suffered losses or replace lost funding so that subsidiaries do not have to shed assets in a "fire sale" to meet redemption demands.

The SPOE is designed to have the equity and debt holders of the parent company absorb all of the losses of holding company subsidiaries, but the FDIC anticipates circumstances when this may not be possible:

> if there are circumstances under which the losses cannot be fully absorbed by the holding company's shareholders and creditors, then the subsidiaries with the greatest losses would have to be placed into receivership, exposing those subsidiary's creditors, potentially including uninsured depositors, to loss. An operating subsidiary that is insolvent and cannot be recapitalized might be closed as a separate receivership. Creditors, including uninsured depositors, of operating subsidiaries therefore, should not expect with certainty that they would be protected from loss in the event of financial difficulties (p. 76623).

Issues Raised by a Title II SPOE Resolution

Most large financial firms that might be subject to Title II are primarily banks

Most of the large financial institutions that might be candidates for a Title II resolution are bank holding companies. For the majority of these institutions, their primary asset is a bank or a subsidiary bank holding company. Figure 1 shows the share of each parent holding company's equity that is invested in a subsidiary, affiliated bank, or a subsidiary bank holding company for all bank holding companies larger than $10 billion in consolidated assets. For most of these institutions, their primary asset is a bank, and even in cases where these institutions have multiple banks or subsidiary bank holding companies, they usually have one large depository institution that holds most of the holding company's consolidated assets and issues most of the holding company's consolidated liabilities. This feature is important because if the bank holding company's largest asset is a big bank, the holding company will only be in financial distress when the largest bank is in distress.

For most Title II candidate firms, parent equity = consolidated holding company equity

To understand how well the SPOE might work in practice, it is instructive to take a closer look at the equity and liability characteristics of bank holding companies larger than $100 billion, banks that might require a Title II resolution. Table 2 reports March 2014 data on all holding companies larger than $100 billion. Two of these holding companies are savings and loan holding companies which have less detailed disclosures reported in the Federal Reserve public data base. The first important point to recognize in Table 2 is that when the equity in the parent holding company is exhausted by losses in its subsidiaries, then there is, at best, only a tiny amount of equity remaining in the consolidated institution.

Table 2 shows that, for most of these institutions, once the parent is facing insolvency because losses exhaust its equity, any equity in its remaining solvent subsidiaries would be consumed by the losses in the holding company's insolvent subsidiaries. So if the parent's equity is exhausted or nearly exhausted when it is taken into a Title II receivership, then parent liability holders must be relied on to bear the receivership losses.

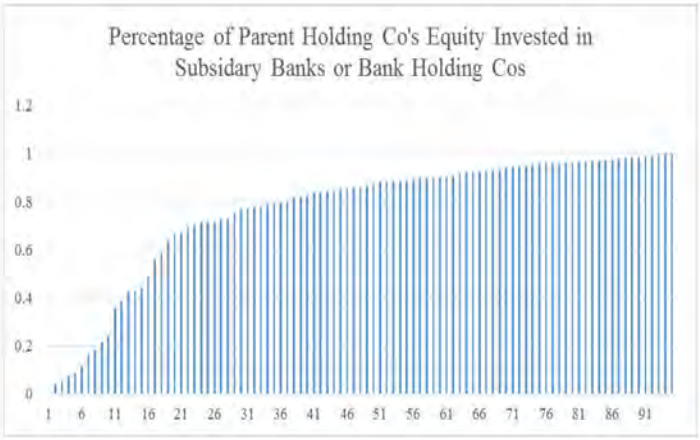

Figure 1: Percentage of parent bank holding company's equity invested in subsidiary or affiliated banks and subsidiary bank holding companies for all bank holding companies largest than $10 billion in consolidated assets. Source: Author's calculation using bank holding company data from the Federal Reserve Board National Information Center.
http://www.ffiec.gov/nicpubweb/nicweb/nichome.aspx

In many cases Title II and SPOE will provide larger Government guarantees than bankruptcy

To keep a financial firm's subsidiaries open and operating, the FDIC will have to guarantee all the subsidiary liabilities so that counterparties do not undertake additional insolvency proceedings that would suspend subsidiary operations and tie up their assets in additional (potentially foreign) legal proceedings. If the FDIC guarantees subsidiary liabilities, then only the parent holding company's liabilities remain to absorb losses and recapitalize and fund subsidiaries.

The final column of Table 2 shows that, in most cases, the parent's liabilities comprise only a small fraction of the consolidated liabilities of these financial firms. This pattern is most pronounced when the holding company's largest assets are held in subsidiary banks. The implication is that a Title II SPOE resolution will extend Government guarantees to the largest majority of the financial firm's liabilities and impose the losses on only a small share of liabilities issued by the consolidated financial firm. This feature creates a Government guarantee that is, in many cases, much larger than the Government guarantee that would arise when a bank fails and the holding company goes into a commercial bankruptcy proceeding.

Holding Company	Consolidated Assets	Parent Holding Company Total Assets	Parent only Equity as a Percentage of Consolidated Equity	Parent only Liabilities as a Percentage of Consolidated Liabilities
1 JPMORGAN CHASE & CO.	$2,476,986,000	$463,296,000	99.80%	10.80%
2 BANK OF AMERICA CORPORATION	$2,152,533,000	$459,156,000	99.98%	11.83%
3 CITIGROUP INC.	$1,894,736,000	$400,870,000	99.15%	11.42%
4 WELLS FARGO & COMPANY	$1,546,707,000	$292,852,000	99.54%	8.55%
5 GOLDMAN SACHS GROUP, INC.	$915,705,000	$277,360,000	99.65%	23.71%
6 MORGAN STANLEY	$831,381,000	$256,383,098	95.45%	24.87%
7 AMERICAN INTERNATIONAL GROUP, INC.	$547,111,000	$143,344,000	99.44%	8.93%
8 GENERAL ELECTRIC CAPITAL CORPORATION	$516,971,228	$574,047,466	99.48%	114.32%
9 U.S. BANCORP	$371,289,000	$55,108,119	98.39%	3.97%
10 BANK OF NEW YORK MELLON CORPORATION	$368,241,000	$64,103,000	97.48%	7.93%
11 PNC FINANCIAL SERVICES GROUP, INC.	$323,586,973	$45,692,264	96.44%	0.85%
12 HSBC NORTH AMERICA HOLDINGS INC.	$308,847,926	$36,245,589	93.46%	1.97%
13 CAPITAL ONE FINANCIAL CORPORATION	$290,886,180	$54,978,022	100.00%	4.91%
14 STATE STREET CORPORATION	$256,672,720	$30,430,990	99.98%	3.89%
15 TEACHERS INSURANCE & ANNUITY ASSOCIATION OF AMERICA*	$252,936,464	$252,936,464	NA	NA
16 TD BANK US HOLDING COMPANY	$237,493,754	$34,023,813	98.05%	4.37%
17 BB&T CORPORATION	$184,651,158	$33,770,316	99.60%	6.40%
18 SUNTRUST BANKS, INC.	$179,553,408	$28,966,042	99.42%	4.61%
19 AMERICAN EXPRESS COMPANY	$151,497,000	$33,256,685	99.95%	10.10%
20 ALLY FINANCIAL INC.	$148,452,000	$45,224,000	99.99%	22.96%
21 CHARLES SCHWAB CORPORATION	$144,066,000	$12,794,000	100.00%	1.49%
22 STATE FARM MUTUAL AUTOMOBILE INSURANCE COMPANY*	$132,022,280	$132,022,280	NA	NA
23 FIFTH THIRD BANCORP	$129,654,487	$20,607,584	99.74%	5.04%
24 UNITED SERVICES AUTOMOBILE ASSOCIATION	$127,322,366	$35,300,145	100.35%	9.99%
25 RBS CITIZENS FINANCIAL GROUP, INC.	$127,295,624	$21,021,496	100.00%	1.46%
26 REGIONS FINANCIAL CORPORATION	$118,136,516	$18,363,716	100.00%	2.19%
27 BMO FINANCIAL CORP.	$114,499,474	$19,357,799	99.96%	5.27%
28 SANTANDER HOLDINGS USA, INC.	$109,168,077	$20,992,661	82.90%	3.53%
29 UNIONBANCAL CORPORATION	$107,237,659	$15,228,926	98.29%	0.83%
30 NORTHERN TRUST CORPORATION	$103,832,578	$11,352,157	100.00%	3.35%

* Indicates savings and loan holding company which have limited data collected in regulatory reports.

Table 2: Equity and liability characteristics of bank and thrift holding companies with consolidated assets in excess of $100 billion. Source: Author's calculations calculation using Federal Reserve Board holding company data. http://www.ffiec.gov/nicpubweb/nicweb/nichome.aspx

Holding company minimum debt regulations will be as complicated as Basel capital regulations

If the FDIC plans to keep subsidiary entities open and operating to maintain financial stability, and the SPOE is the resolution strategy, then Title II is likely to expand the Government safety net beyond what would happen in a bankruptcy proceeding. The FDIC and Board of Governors position on this critique is that the agencies will in time craft new debt requirements for the parent holding company to ensure that it has an adequate stock of senior and subordinated debt to absorb substantial losses. But crafting holding company minimum debt requirements is a process that is analogous to the process of calculating regulatory capital requirements. The development of regulatory capital requirements has taken tremendous regulatory and bank resources, not to mention more than 15 years of development time. Moreover, holding company minimum debt requirements will also have international competitive implications if large foreign banks do not face similar requirements. This sets up the case for another yet another Basel process to set international requirements for holding company debt issuance.

The OLF is a new guarantee fund that conflicts with the deposit insurance fund

If the parent holding company liabilities are insufficient to support receivership losses and distressed subsidiary recapitalization needs, the FDIC will have to use the OLF to fund the receivership. This will require an FDIC assessment of all financial firms with consolidated assets larger than $50 billion to fund the receivership.

While it has not been widely discussed since the passage of the DFA, the OLF Title II mechanism sets up a new Government guarantee fund. Under the SPOE, it will guarantee all but the parent holding company liabilities of the failing financial firm unless the FDIC decides to put some subsidiaries into default. Unless there are some operational details yet to be released, resources from the OLF will be available to guarantee deposits at a bank subsidiary. Consequently, Title II creates a conflict of interest between banks that support the deposit insurance fund and larger institutions that will be assessed to fund the OLF. This conflict becomes transparent when considering a SPOE resolution for a bank holding company whose primary asset is a single large bank.

Among bank holding companies with consolidated assets greater than $50 billion, there are 13 institutions that own a single bank subsidiary. Selected characteristics

of these institutions are reported in Table 3. Of these institutions, only Goldman Sachs and Ally Financial have significant investments in nonbank subsidiaries. Investments in the operating subsidiaries in the remaining 11 holding companies are concentrated in the holding company's single bank. If any of these holding companies is in distress, their bank must also be failing. If any of these designated institutions becomes distressed and imperils the financial stability of the U.S. financial system, then the Secretary of the Treasury and the President must make a decision whether to put the distressed firm through an FDIA resolution, or invoke Title II and use a SPOE resolution. This decision has important consequences.

An FDIA bank resolution resolves the bank using the FDIC's long standing administrative resolution process. Under this process, the failed bank's shareholders and senior and subordinated debt holders bear the institution's losses. Deposit protection, if needed, is provided by the deposit insurance fund, a fund that is built from assessments on all insured banks. Under an FDIC bank resolution, the holding company equity holders will suffer very large losses, and the holding company is often forced to reorganize in bankruptcy. Holding company senior and subordinated debt holders may have a better experience, and indeed they may even suffer no loss in bankruptcy. [7]

Under a Title II resolution, the investors that own senior and subordinated debt in the bank will be fully protected under the SPOE strategy. Bank deposits, insured and uninsured, will also be fully protected under a Title II resolution. The SPOE will impose losses on investors in senior and subordinated holding company debt holders if the receivership losses cannot be fully absorbed by the holding company's equity. Any additional losses and recapitalization needs that cannot be covered by the holding company debt will be borrowed from the OLF. Repayment of these OLF funds will be assessed against any financial firm with assets greater than $50 billion.

With Presidential approval, Title II empowers the Secretary of the Treasury to change property rights without prior notice, public debate, or Congressional action

The decision to use an FDIC Act resolution versus a Title II SPOE resolution has important consequences for investors. While holding company bankruptcy and FDIA resolutions are the presumed status quo where bank debt holders bear losses and bank holding company debt holders have a better chance of recovery, the Secretary of the Treasury and the President can, quickly and without public debate or Congressional approval, change the rules.

If Title II is invoked, losses are shifted onto holding company debt holders, and bank deposits, investors in bank debt, and the deposit insurance fund are fully protected against any losses. Title II allows the President and his appointed Secretary of Treasury to completely change property rights and shift losses among distinctly different investors without prior notice, public debate, or any vote from Congress.

[7] For example, the senior and subordinated debt holders in WAMU bank suffered large losses while the senior and subordinated debt in the holding company had a 100 percent recovery on their securities.

Institution	Parent holding company liabilities	Bank liabilities	Parent liabilities as a percentage of bank liabilities
Goldman Sachs	$198,261,000	$84,341,000	235.07%
US Bancorp	$13,054,119	$326,154,482	4.00%
PNC Financial Services	$2,371,454	$274,311,095	0.86%
State Street	$9,158,101	$232,239,094	3.94%
BB&T	$10,311,260	$158,039,434	6.52%
Suntrust	$7,275,141	$153,490,040	4.74%
Ally Financial	$30,765,000	$82,572,057	37.26%
Fifth-Third	$5,781,902	$111,360,115	5.19%
Regions	$2,504,733	$101,004,081	2.48%
Northern Trust	$3,403,814	$96,299,648	3.53%
Key Corp	$3,349,783	$78,597,573	4.26%
Huntington Bancshares	$1,600,186	$54,774,690	2.92%
BBVA	$122,173	$63,120,164	0.19%

Table 3: Selected characteristics of bank holding companies with consolidated asset in excess of $50 billion with a single subsidiary bank. Source: Author's calculations calculation using Federal Reserve Board holding company data http://www.ffiec.gov/nicpubweb/nicweb/nichome.aspx and FDIC Statistics on Depository Institutions http://www2.fdic.gov/sdi/index.asp

Unless the holding company has specific characteristics that are uncommon among the largest holding companies, invoking Title II has the potential to provide Government guarantees far in excess of those that might be in force under an FDI Act resolution. The last column of Table 3 reports the liabilities of the parent holding company as a percentage of the subsidiary bank liabilities. Except for Goldman Sachs and Ally Financial, a Title II SPOE resolution would impose losses on only a very small fraction of liabilities issued by the consolidated holding company. If the bank subsidiary liabilities were protected by the SPOE, it is probable that a large share of the holding company's losses would be borne by the firms that must contribute to the OLF.

Title II provides inadequate funding to prevent asset "fire sales"

The SPOE raises a few additional issues. Under Title II, access to OLF funds are limited to 10 percent of the value consolidated assets of the failed financial firm as reported on its last financial statement. After 30 days, or when the FDIC completes an assessment of the market value of the receiverships' assets, OLF funding can increase to up to 90 percent of the market value of assets available to fund the receivership. The 10 percent cap on SPOE funding raises some important issues.

It is highly unlikely that a large financial institution fails because it prepares its financial statements and discovers that it is undercapitalized. Instead, long before financial statements reflect true distressed values, market investors lose confidence and withdraw funding from the firm. The firm ultimately suffers a liquidity crisis that forces it to find a buyer or to reorganize. In the case of Wachovia and WAMU, somewhere close to 10 percent of their depositors "ran" in the weeks before they failed. Thus, history suggests that a large financial institution that is in danger of failing will have losses that require capital injections, but they will also face funding withdrawals that must be replaced if they are to avoid asset "fire sales."

When the FDIC is required to quickly replace funding withdrawals and inject capital using the OLF, the 10 percent funding cap could become an important impediment. To avoid the cap, the FDIC may have to revalue the receivership assets quickly and then request funds in excess of 10 percent of holding company's initial consolidated assets. In reality, the FDIC does not have the capacity to value receivership assets that quickly, especially if the failure is a surprise. While I believe that the 10 percent funding cap is an example of good Congressional governance on paper, in practice, the FDIC will likely be forced into a speedy and less than rig-

orous revaluation because it will have access additional OLF funding in the early days of a Title II receivership.

How will Title II work when and a bank subsidiary is simultaneously being resolved under the FDI Act?

Some of my criticisms of the SPOE have been anticipated in the FDIC Federal Register proposal where the FDIC reserves the right to take the subsidiary bank or nonbank subsidiaries into separate receiverships:

> if there are circumstances under which the losses cannot be fully absorbed by the holding company's shareholders and creditors, then the subsidiaries with the greatest losses would have to be placed into receivership, exposing those subsidiary's creditors, potentially including uninsured depositors, to loss. An operating subsidiary that is insolvent and cannot be recapitalized might be closed as a separate receivership. Creditors, including uninsured depositors, of operating subsidiaries therefore, should not expect with certainty that they would be protected from loss in the event of financial difficulties (p. 76623).

It is unclear how this policy would work when a large financial holding company is predominately comprised of a large bank, especially of the bank is internationally active. The overarching goal of the SPOE's is too keep critical subsidiaries of the holding company open and operating to facilitate global cooperation, prevent "ring-fencing," multiple competing insolvencies, and counterparty reactions that create operational difficulties and systemic risk. The resolving the large bank subsidiary would certainly create the problems SPOE tries to avoid.

The FDIC's SPOE proposal does not explain how a Title II resolution would work when it is paired with a FDIA resolution of a bank subsidiary. It is unclear how losses will be allocated between bank and holding company creditors and between contributors to the deposit insurance fund and the OLF. It is also difficult to envision how the FDIC might be able to close a very large internationally active bank subsidiary, and impose losses on its creditors, while keeping it open and operating and out of extranational bankruptcy proceedings.

Does Title II work in a true financial crisis?

The last and biggest issue is how Title II and the SPOE would work when multiple large financial firms are simultaneously in distress. Would SPOE be used to simultaneously to resolve multiple large financial institutions through bridge banks? How different is this from nationalizing these banks which could comprise a large part of the banking system?

Title II and SPOE do not fix the too-big-to-fail resolution problem in a true financial crisis when the distress of large financial institutions is mostly likely to arise. In my judgment, Title II complicates and compounds the too-big-to-fail issue at times when a single large institution fails in isolation without providing a practical solution in a financial crisis when many large financial firms are likely to be distressed simultaneously.

If Not Title II and SPOE, Then What?

I have argued that Title II implemented using SPOE does not fix the too-big-to-fail problem and instead introduces many new complications into the resolution process. There may be better policies available to deal with the distress of a large systemically important financial institutions and I briefly discuss some of these options.

Mandatory contingent capital

I would argue that a requirement for large institutions to fund themselves with an adequate buffer of contingent capital is probably a better solution than SPOE. First, it is useful to realize that SPOE operates similarly to a contingent capital buffer, only the Secretary of the Treasury decides when to trigger the conversion of debt into equity, and to date, no requirements have been issued that force designated holding companies to issue a minimum amount of senior or subordinated debt that might be converted.

Under Title II and the SPOE, neither investors in holding company debt nor investors in the senior and subordinated debt of the subsidiary bank know whether they will be called on to convert their debt claims into an equity claim against the receivership. As a consequence, both groups of investors will demand a risk premium for the additional uncertainty.

Contingent capital, or a requirement to issue so-called "co-cos" would solve many of the problems associated with SPOE. Its issuance would be required by all designated firms ex ante and not just required ex post in a Title II resolution. Presum-

ably co-cos would be required at the holding company level so that all designated firms are treated through the same recapitalization mechanism. Conversion triggers should be explicit and written into the contingent capital contract terms before bonds are sold, so that investors have the best available information to price the securities correctly. Provided issuance requirements are sufficient, co-cos would avoid the need to use of the OLF.

To the best of my knowledge, European approaches for requiring contingent capital do not require immediate management removal. Managers may continue to serve (or not) according to the preferences of the shareholders after conversion. DFA requires managers and directors to be fired and replaced in a Title II resolution. To satisfy this requirement, the FDIC claims it will have a collection of vetted managers waiting to run a SPOE bridge institution. This claim seems a bit of a stretch. There are probably few people with such a capability, and my guess is that they are already fully employed and well compensated.

Unlike the SPOE, it is easy to envision how contingent capital might work in a financial crisis when many designated firms simultaneously approach distress. Multiple conversions would recapitalize designated institutions without the need to resort to simultaneous Title II resolutions.

There are still many unresolved issues related to the use of contingent capital to solve the too-big-to-fail problem. Foremost among these is the design of appropriate conversion triggers. Triggers should be based on objective criteria and not left to the discretion of regulators. A second issue is what happens if you need a resolution mechanism after conversion is triggered? Even allowing that open issues remain, still I think that contingent capital is a more practical solution relative to Title II and a SPOE resolution.

Using Title I to fine-tune FDIC large bank resolutions

Historically, when large banks fail, the FDIC arranges a whole bank transaction in which a larger, typically healthier bank, assumes all the deposits and most if not all of the institutions assets. Sometimes the FDIC uses a loss share agreement to partially cover losses on the failed bank assets that are of questionable quality. A whole bank transaction was used to resolve WAMU, the largest bank failure in U.S. history, without cost to the deposit insurance fund.

The problem with whole bank resolutions is that there needs to be a bigger healthier bank to purchase the failing institution, and even when one exists, if a sale is successful, it creates a new larger institution. One step toward fixing the too-big-to-fail problem, is to require the FDIC to break up failing banks when they sell them in a normal FDI Act resolution.

There are costs associated with changing the public policy priorities in an FDIC resolution. Whole bank purchases often impose the least cost on the deposit insurance fund because bidders value acquiring the entire franchise intact. It may be costly and require significant time and resources to separate and market large failing banks piecemeal. For example, it may be difficult to identify all bank operations associated with a single customer relationship, and more difficult yet to package these customer relationships into subfranchises that are readily marketable. But the added resolution costs are costs that must be born to avoid creating too-big-to-fail banks through the resolution process. Indeed the FDIC SPOE envisions a similar process in a Title II resolution.

There may be practical ways to reduce the cost of requiring the FDIC to break up large banks in an FDIA resolution. For example, the FDIC could be required to use Title I orderly resolution planning powers to require organizational changes within the depository institution that would allow the institution to be more easily broken apart in a resolution. This may involve organizational changes to information systems, employee reporting lines or other process to ensure that the bank has the capacity to conduct key operations in house and is not relying on venders or consultants in a manner that would inhibit the break-up of the institution in a resolution process.

There are many complicated, complex, and potentially costly issues that must be solved before a large bank could be successfully dismantled and sold in pieces in an FDIC resolution. However, these issues are a subset of the issues the FDIC must solve if it is to undertake a Title II resolution of the largest, most complex and internationally active institutions and downsize them in the resolution process.

Once large regional banks can be managed and downsized in the course of a normal bank resolution, there would no longer be a case to require these banks to meet heightened prudential capital, leverage, stress test, or other regulatory standards prescribed by Section 165 (excepting the requirement to submit a satisfactory orderly resolution plan). Improvements in the resolution process can substitute for overly rigorous prudential regulations that limit economic growth.

ADDITIONAL MATERIAL SUPPLIED FOR THE RECORD

LETTER FROM PAUL SALTZMAN, PRESIDENT, THE CLEARING HOUSE ASSOCIATION L.L.C., EXECUTIVE VICE PRESIDENT AND GENERAL COUNSEL OF THE CLEARING HOUSE PAYMENTS COMPANY L.L.C., SUBMITTED BY CHAIRMAN BROWN

The Clearing House
At the Center of Banking Since 1853

Paul Saltzman
President of the Association
EVP and General Counsel of the Payments Company
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July 15, 2014

The Honorable Daniel K. Tarullo
Governor
Board of Governors of the Federal Reserve System
20th Street & Constitution Avenue, N.W.
Washington, D.C. 20551

Re: Appropriately Tailoring Prudential Regulation

Dear Governor Tarullo:

I am writing to express The Clearing House's appreciation and support for your remarks of May 8, 2014 emphasizing the importance of appropriately tailoring the application of prudential regulation based on the size, scope, and range of activities of individual banking organizations and further suggesting that the universe of bank holding companies currently subject to enhanced prudential standards under Title I of the Dodd-Frank Act, based solely on their asset size, may be overly broad.

As an organization representing the interests of banking organizations of a wide range of sizes and business types, we agree that the scope of the post-crisis prudential framework, including the Basel III capital and liquidity framework and the enhanced prudential standards established under Title I, should be appropriately tailored and scaled to the diversity of banking organizations and business models that exist in the United States. Accordingly, we share your view that prudential regulation should vary according to the size, scope, and range of activities of banking organizations, reflecting the different types and levels of systemic risk they may pose.

The Clearing House has frequently emphasized in our comment letters and other public statements that a "one-size-fits-all" approach to regulation, and to macroprudential regulation in particular, is inappropriate and would inherently fail to account for the wide variety of business models and practices that exist among individual institutions.[1]

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1 *See, e.g.*, The Clearing House, *Comment Letter to the Board of Governors of the Federal Reserve System re: Enhanced Prudential Standards and Early Remediation under Dodd-Frank 165/166* (April 27, 2012) at 20. Further still, Congress similarly recognized the importance of this goal when it passed the Dodd-Frank Act. Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, § 165(a)(2), 124 Stat. 1376, 1423-24 (2010) ("In prescribing more stringent prudential standards . . . the Board of Governors may . . . differentiate among

Similarly, The Clearing House also strongly believes that the application of heightened prudential standards should not simply be a function of an organization's asset size, but should instead be based on a holistic, individualized assessment of the wide range of factors that may ultimately inform one's view of that organization's overall risk profile and the specific systemic risks that it may pose. We have frequently pointed out that asset size alone is an unreliable indicator of firm-specific or systemic risk, and thus automatic asset-based thresholds are equally unreliable bases for the application of the specific prudential rules that are intended to address those risks.[2]

For these reasons, we are heartened by your leadership and willingness to publicly highlight the benefits of appropriately scaled and tailored regulation. We continue to harbor significant concern with any approach to tailoring the scope of prudential rules based on asset size alone. As the Federal Reserve, Congress, and other policymakers consider regulatory, legislative, and other actions to address this important question, The Clearing House would be pleased to offer whatever assistance might be helpful in tailoring a prudential framework that effectively but sensibly supports our jointly-held objective: a sound, stable and competitive financial system that supports the health and growth of the American economy.

With Regards,

Paul Saltzman
President, The Clearing House Association L.L.C.
Executive Vice President and General Counsel of
The Clearing House Payments Company L.L.C.

cc: The Honorable Janet Yellen
Board of Governors of the Federal Reserve System

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companies on an individual basis or by category, taking into consideration their capital structure, riskiness, complexity, financial activities (including the financial activities of their subsidiaries), size, and any other risk-related factors that the Board of Governors deems appropriate.").

[2] *See* The Clearing House, *Vanquishing TBTF: Rhetoric Versus Reality and the Value of Systemically Important Banks in the Global Financial System* (Mar. 26, 2013) at 15.

The Honorable Jack Lew
Department of the Treasury

The Honorable Thomas J. Curry
Office of the Comptroller of the Currency

The Honorable Martin J. Gruenberg
Federal Deposit Insurance Corporation

The Honorable Richard Cordray
Consumer Financial Protection Bureau

The Honorable Timothy Massad
Commodity Futures Trading Commission

The Honorable Mary Jo White
Securities and Exchange Commission

The Honorable Mel Watt
Federal Housing Finance Agency

Debbie Matz
National Credit Union Association

STATEMENT SUBMITTED BY CHRISTY L. ROMERO, SPECIAL INSPECTOR GENERAL FOR THE TROUBLED ASSET RELIEF PROGRAM

SIGTARP | Office of the Special Inspector General for the Troubled Asset Relief Program

Advancing Economic Stability Through Transparency, Coordinated Oversight and Robust Enforcement

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U.S. SENATE BANKING, HOUSING AND URBAN AFFAIRS COMMITTEE
SUBCOMMITTEE ON FINANCIAL INSTITUTIONS AND CONSUMER PROTECTIONS

WRITTEN TESTIMONY SUBMITTED BY

THE HONORABLE CHRISTY L. ROMERO

SPECIAL INSPECTOR GENERAL

FOR THE TROUBLED ASSET RELIEF PROGRAM

BEFORE THE
U.S. SENATE BANKING, HOUSING AND URBAN AFFAIRS COMMITTEE
SUBCOMMITTEE ON FINANCIAL INSTITUTIONS AND CONSUMER PROTECTIONS

July 16, 2014

Chairman Brown and Ranking Member Toomey, I want to thank you for holding today's hearing which holds great importance for hardworking Americans. The Office of the Special Inspector General for the Troubled Asset Relief Program ("SIGTARP") serves as the watchdog over the Federal bailout known as the Troubled Asset Relief Program ("TARP") passed by Congress in 2008 in response to the financial crisis. TARP is a program that will continue to last for many more years, as Treasury has scheduled financial obligations under TARP until at least December 31, 2021. Congress created SIGTARP to protect the interests of those who funded TARP programs – American taxpayers. An important part of SIGTARP's mission is to bring transparency to decisions that were made in the wake of the financial crisis, because there are important implications for the future.

Lessons Learned from TARP on Identifying Systemically Important Institutions

Today's hearing asks a very relevant, critical and timely question: "What Makes a Bank Systemically Important?" Another way to pose that question is what made a bank so important in the past that taxpayers had to bail it out to prevent systemic harm? SIGTARP conducted two deep dive audits into how the Government determined that certain TARP recipients were systemically important, and we are including our findings from these reports to assist the Committee's examination of this issue. Only by examining the past can we take advantage of lessons learned to protect taxpayers in the future.

Interconnections of banks to each other and to hardworking Americans

In 2008, Treasury and Federal banking regulators were forced to address the question of systemic importance when they came to a surprising realization that our nation's largest financial institutions were tied as counterparties to each other so that if one went down, it pulled the others

and our economy down with it. Some companies did not understand their true exposures to their counterparties or other large financial institutions which were hidden in complicated derivatives like securities backed by subprime mortgages sold by Bear Stearns, Lehman Brothers or others, and hedging products like credit default swaps sold by AIG. With exposures to these financial institutions hidden, regulators were caught unaware. According to then-Treasury Secretary Timothy Geithner's June 18, 2009 testimony to Congress, the rise of new financial instruments "that were almost entirely outside of the Government's supervisory framework left regulators largely blind to emerging dangers." Companies also did not understand their exposures to short-term funding counterparties. Then-Secretary Geithner testified on September 23, 2009, that firms were "reliant on very short-term funding that can flee in a heartbeat. And that is what brought the system crashing down." The interconnections and exposures of these new instruments and short-term funding had grown more intricate, complex and dangerous as banks had grown to become megabanks.

Even more surprising was the realization that the finances of hardworking Americans were dependent on these too big to fail players and the market they created – and that was why Treasury and the Federal Reserve Board requested Congressional authority for the TARP bailout. When then-Federal Reserve Board Chairman Ben Bernanke asked Congress to authorize TARP on September 23, 2008, he testified, "the taxpayer is on the hook" if the system does not work the way it needs to work. The following day, he testified before Congress, "People are saying, 'Wall Street, what does it have to do with me?' That is the way they are thinking about it. Unfortunately, it has a lot to do with them. It will affect their company, it will affect their job, it will affect their economy. That affects their own lives, affects their ability to borrow and to save and to save for retirement." His testimony proved true, as trillions of dollars

in household wealth were lost in the crisis, even with TARP. One lesson learned from TARP is that too big to fail is not just about size – it is about the interconnections the largest financial firms have to each other and to American households. The interconnections that pose grave risk to the financial system and ultimately to American households in the event of the institutions' failure or near failure make banks and other financial institutions systemically important.

Investor Confidence & the Threat of Bank Runs as a Measure of Systemic Importance

In addition to these interconnections, an institution's ability to impact investor confidence plays a material role in answering the question of "What Makes a Bank Systemically Significant?"

What made the first nine TARP recipients systemically important: In SIGTARP's report "Emergency Capital Injections Provided to Support the Viability of Bank of America, Other Major Banks, and the U.S. Financial System," we examined the Government's selection of the first nine financial institutions as systemically important, resulting in them receiving TARP capital injections under TARP's Capital Purchase Program in October 2008. SIGTARP found that these nine institutions were chosen for their "perceived" importance to the market and greater financial system. Government officials strongly urged the nine institutions to accept these monies as a group, irrespective of whether individual institutions felt that they required assistance, in the belief that it was crucial to restore public confidence in the banking system.

To demonstrate Federal government support to the financial system and promote consumer and investor confidence, Bank of America, Citigroup, Wells Fargo, JPMorgan Chase, Goldman Sachs, Morgan Stanley, Merrill Lynch, State Street Corporation, and the Bank of New York Mellon were selected to receive the first TARP capital injections based on the types of services they provide to the consumers and businesses and their collective importance to the

financial system, according to Treasury officials and Federal regulators. Federal regulators agreed that the institutional selections were logical and viewed them as systemically important because of the types of services they provide, their size, and their interdependence with each other and the broader economy. As such, their participation in TARP's CPP was considered central to the government's solution to stabilize the financial markets.

According to Treasury officials and Federal regulators, the nine institutions represented the nation's leaders in the commercial and investment banking sector, as well as the U.S. custodial and securities processing system. These institutions include four large commercial banks, three investment banks, and two custodial and processing institutions:

- The four large commercial banks—Bank of America, Citigroup, JPMorgan Chase, and Wells Fargo—are "traditional" banks. They accept deposits, make commercial and industrial loans, and perform other banking services for the public.
- The three investment banks—Goldman Sachs, Morgan Stanley, and Merrill Lynch—are largely financial intermediaries. They perform a variety of services, including underwriting (purchasing and distributing securities), acting as the intermediary between an issuer of securities and the investing public, facilitating mergers and other corporate reorganizations, and acting as brokers for institutional clients.
- State Street and the Bank of New York Mellon are also central to the financial system because they provide custodial services, such as securities processing and settlement services for financial transactions.

Together, these nine institutions provide broad financial services and engage in key activities of the U.S. financial system. Another criterion considered in the selection was the size of the institutions. The nine selected institutions together held more than $11 trillion dollars in banking assets—approximately 75 percent of all assets held by U.S-owned banks as of June 30, 2008.

Various Federal officials and bank executives noted that these nine systemically important institutions are also highly interdependent and interconnected with each other. Some of the institutions are counterparties to each other, such that a risk of one institution failing to live up to its contractual obligations would cause financial problems, if not failure, for another. Bank of America and Merrill Lynch had counterparty exposures with many financial institutions, including several of the nine banks in the initial group that received CPP funds. In addition, two bank executives SIGTARP interviewed explained that State Street and the Bank of New York Mellon were included in the initial group of nine institutions because they were 'infrastructure' institutions that provided securities processing and settlement services for other financial transactions. According to the executive, when the operations of then-Bank of New York were temporarily disrupted as a result of the terrorist attacks on September 11, 2001, it had significant effects on the functioning of other financial institutions.

What made Citigroup systemically important: In SIGTARP's report "Extraordinary Assistance Provided to Citigroup, Inc.", SIGTARP examined the decision by the Government to provide additional TARP assistance to one of the initial nine TARP recipients, Citigroup, through a TARP program known as the Targeted Investment Program. The stated goal of TARP's TIP program was to invest funds, on a case-by-case basis, "to strengthen the economy and protect American jobs, savings, and retirement security" where "the loss of confidence in a financial institution could result in significant market disruptions that threaten the financial

strength of similarly situated financial institutions." Treasury provided an additional $20 billion each in TARP assistance to Bank of America and Citigroup under this program.

SIGTARP reported that in November 2008, Citigroup teetered on the brink of failure. Even though it had received $25 billion from TARP's Capital Purchase Program just weeks earlier, it was the subject of a global run on its deposits, its stock was in a nosedive as short sellers sought to profit on the market's perception of its deteriorating condition, and the cost of insuring its debt in the credit default swap market was increasing at an alarming pace compared to its peers. Worried that Citigroup would fail absent a strong statement of support from the U.S. Government, and that such failure could cause catastrophic damage to the economy, then-Treasury Secretary Henry Paulson and then-FRBNY President Timothy Geithner held a series of discussions with FRB Chairman Ben Bernanke, FDIC Chairman Sheila Bair, and then Comptroller of the Currency John Dugan to discuss bailing out Citigroup. The underlying premise of these discussions was that Citigroup was too systemically significant to be permitted to collapse.

Secretary Paulson, FRB, and OCC expressed concern at that time that depositors might start a run on Citigroup, and that as a result, the bank would suffer a severe liquidity crisis (not have enough cash on hand) and not be able to meet its obligations as they became due. During the November 23, 2008, meeting in which the FDIC Board unanimously voted to recommend that Treasury invoke the systemic risk exception for Citigroup, one FDIC official said "The risk profile of Citibank is increasing rapidly due to the market's lack of confidence in the company and the substantially weakened liquidity position. Without substantial Government intervention that results in a positive market perception on Monday morning, OCC and Citigroup project that Citibank will be unable to pay obligations or meet expected deposit outflows next week."

Another participant in the meeting said, "The issue now is the potential for a large worldwide bank run, and that's what has got to be brought under control." SIGTARP reported that the Government gave the $20 billion in additional TARP assistance with the focus on sending a message to reassure the markets – the Government would not let Citigroup fail.

SIGTARP reported that the conclusion of the various Government actors that Citigroup had to be saved was strikingly ad hoc. While there was consensus that Citigroup was too systemically significant to be allowed to fail, that consensus appeared to be based as much on gut instinct and fear of the unknown as on objective criteria. The absence of objective criteria for that conclusion raised concerns as to whether there was selective creativity being exercised in who was systemic and who was not. At the FDIC meeting, Office of Thrift Supervision Director John Reich said, "It's obviously a systemic risk situation. I don't have any question about that." According to Chairman Bernanke, it was "not even a close call to assist them." Secretary Paulson said, "If Citi isn't systemic, I don't know what is." An undated action memorandum for the Secretary discussed Treasury's reasons for supporting the Systemic Risk Determination. According to the memorandum, Citigroup's failure would threaten the viability of creditors and counterparties exposed to the institution, impair the liquidity of even well-capitalized institutions, dislocate the credit markets, and undermine business and household confidence in the broader economy.

As SIGTARP reported, given the urgent nature of the crisis surrounding Citigroup, the ad hoc character of the systemic risk determination is not surprising, and SIGTARP found no evidence that the determination was incorrect. Nevertheless, the absence of objective criteria for reaching such a conclusion raised concerns. Then-Director of the Office of Thrift Supervision John Reich, at FDIC's Board meeting on November 23, 2008, in which FDIC made its

determination to proceed with the Citigroup transactions, observed that there had been "some selective creativity exercised in the determination of what is systemic and what's not," and that there "has been a high degree of pressure exerted in certain situations, and not in others, and I'm concerned about parity." SIGTARP reported that concerns about "selective creativity" and "parity" could be addressed at least in part by the development, in advance of the next crisis, of clear, objective criteria and a detailed roadmap as to how those criteria should be applied.

SIGTARP reported that Citigroup was perceived as being interdependent and interconnected with a broad array of different financial institutions both in the U.S. and internationally, and in FRB's view, Citigroup's failure would have implications that reached beyond the bank itself. FRB regulators believed that a Citigroup failure would have destabilized the global financial system by seriously impairing already disrupted credit markets, including short-term interbank lending, counterparty relationships in qualified financial contract markets, bank and senior subordinated debt markets, and derivatives. Citigroup's Global Transaction Servicing unit offered integrated cash management, trade, and securities and fund services to multinational corporations, financial institutions, and public sector organizations spanning more than 100 countries and 65,000 clients. Given the significance of Citigroup's GTS unit, the collapse of Citigroup would have had devastating effects on the broader economy. Chairman Bernanke told SIGTARP that he believed that a Citigroup failure had the potential to block access to ATMs and halt the issuing of paychecks by many companies and governments. An FDIC official separately said that adverse effects on money market liquidity could be expected on a global basis.

As reported by SIGTARP, according to FRB's memorandum assessing the company's systemic risk, Citigroup also was a major player in a wide range of derivatives markets, both as a

counterparty to over-the-counter trades, and as a broker and clearing firm for trades on exchanges. At the end of the third quarter, the notional principal value of its derivatives positions was more than $35 trillion, the bulk of which was held by its Citibank, N.A., subsidiary. A failure of Citigroup would have left many of its derivatives counterparties scrambling to replace contracts that they had with Citigroup. Citigroup's derivatives positions were fairly well balanced, so in more normal conditions counterparties might be able to replace Citigroup's derivatives contracts relatively easily, according to the FRB memo. However, given concerns about counterparty credit risk and strains in some derivatives markets at the time, those contracts might have proven difficult to replace.

SIGTARP's concluded its January 2011 report Extraordinary Financial Assistance Provided to Citigroup Inc., reporting that then-Secretary Geithner told SIGTARP that he believed creating effective, purely objective criteria for evaluating systemic risk is not possible: "What size and mix of business do you classify as systemic?...It depends too much on the state of the world at the time. You won't be able to make a judgment about what's systemic and what's not until you know the nature of the shock" the economy is undergoing. Secretary Geithner also suggested that whatever objective criteria were developed in advance, markets and institutions would adjust and "migrate around them." If the Secretary is correct, then systemic risk judgments in future crises will again be subject to concerns about consistency and fairness, not to mention accuracy. The Dodd-Frank Wall Street Reform and Consumer Protection Act ("Dodd-Frank Act") created the Financial Stability Oversight Council ("FSOC") and charged it with responsibility for developing the specific criteria and analytical framework for assessing systemic significance. SIGTARP remains convinced that even if some aspects of systemic significance are necessarily subjective and dependent on the nature of the crisis at the time, an

emphasis on the development of clear, objective criteria in advance of the next crisis would significantly aid decision makers likely to be burdened by enormous responsibility, extreme time pressure, and uncertain information. Moreover, FSOC must be transparent about how it will apply both objective and subjective criteria to a failing institution, and must seek to gauge the market and adjust the criteria in the event that firms do indeed seek to "migrate around them." Without minimizing the legitimate concerns raised by Secretary Geithner, it is imperative that FSOC not simply accept the adaptability of Wall Street firms to work around regulation, but instead maintain the flexibility to respond in kind.

The designation of systemic importance is critical because as SIGTARP reported, when the Government assured the world in 2008 that it would use TARP to prevent the failure of any major financial institution, and then demonstrated its resolve by standing behind Citigroup, it did more than reassure troubled markets – it encouraged high-risk behavior by insulating the risk takers from the consequences of failure. Unless and until institutions like Citigroup are either broken up so that they are no longer a threat to the financial system, or a structure is put in place to assure that they will be left to suffer the full consequences of their own folly, the prospect of more bailouts will potentially fuel more bad behavior with potentially disastrous results.

Notwithstanding the passage of the Dodd-Frank Act, which does give FDIC new resolution authority for financial companies deemed systemically significant, the market still gives the largest financial institutions an advantage over their smaller counterparts. They are able to raise funds more cheaply, and enjoy enhanced credit ratings based on the assumption that the Government remains as a backstop. Specifically, creditors who believe that the Government will not allow such institutions to fail may under price their extensions of credit, giving those institutions' access to capital at a price that does not fully account for the risk created by their

behavior. Cheaper credit is effectively a subsidy, which translates into greater profits, giving the largest financial institutions an unearned advantage over their smaller competitors. And because of the prospect of another Government bailout, executives at such institutions might be motivated to take greater risks than they otherwise would, shooting for a big payoff but with reason to hope that if things went wrong they might still be able to keep their jobs.

The moral hazard effects of TARP in general and the bailouts of Citigroup in particular may eventually be ameliorated by full implementation of the provisions of the Dodd-Frank Act, which was intended in part to address the problem of institutions that are "too big to fail." Whether it will do so successfully remains to be seen, with important work by FDIC, FSOC, and a host of other regulators far from complete. Even after those bodies develop and implement new rules and regulations authorized by the Dodd-Frank Act, which would prohibit some of the benefits received by Citigroup under TARP, taxpayers likely won't know about the extent of their continuing exposure until the next crisis. As Secretary Geithner told SIGTARP in December 2010, with the Dodd-Frank Act, the "probability of failure is reduced because the banks hold more capital. The size of the shock that hit our financial system was larger than what caused the Great Depression. In the future we may have to do exceptional things again if we face a shock that large. You just don't know what's systemic and what's not until you know the nature of the shock. It depends on the state of the world – how deep the recession is. We have better tools now, thanks to Dodd-Frank. But you have to know the nature of the shock." Secretary Geithner's candor about the difficulty of determining "what's systemic and what's not until you know the nature of the shock," and the prospect of having to "do exceptional things again" in such an unknowable future crisis is commendable. At the same time, it underscores a TARP legacy, the moral hazard associated with the continued existence of institutions that

remain "too big to fail." It also serves as a reminder that the ultimate cost of bailing out Citigroup and the other "too big to fail" institutions will remain unknown until the next financial crisis occurs.

Addressing Systemic Risk Posed by Systemically Important Institutions

For those institutions already identified as systemically important, more hard work is required. The institutions themselves, and their regulators, have the benefit of what was missing in the crisis – time – time to understand the interconnections and the risk they pose, and limit any dangerous risk so they are not caught unaware again.

Too big to fail continues to be a threat. Our nation's top financial regulators must take the necessary steps to end too big to fail by uncovering, understanding, and breaking off dangerous interconnections that could sow the seeds for a future crisis. It is the threat of these interconnections to the greater financial system that if not resolved, will determine whether there are future crises, and future bailouts. To let one of the largest financial firms fail requires regulators to have confidence that they can close down the firm without damaging the greater economy, and as a nation we have made progress, but there is more to be done.

Dodd-Frank reforms seek to end future taxpayer bailouts of systemically important institutions by using a dual approach: front line measures aimed at keeping the largest financial institutions safe and sound, and a last line defense aimed at letting a company fail without damaging the economy. Then Federal Reserve Chairman Bernanke testified before Congress in July 2012 that the blueprint for attacking too big to fail lies in Dodd-Frank's fail-safes that a company will be allowed to fail in bankruptcy or a new FDIC process called orderly liquidation authority.

The existence of bankruptcy planned by living wills and the FDIC's orderly liquidation authority, however, have not fully convinced the market to change its perception that select financial firms will get another bailout, and have not convinced megafirms to simplify their organizations or disentangle dangerous interconnections. There may be no time for bankruptcy particularly for certain players who dominate the market in providing a critical service to the economy as was the case in 2008. In addition, because the nation's largest financial firms remain highly interconnected, impairments will spread to others, decreasing the number of healthy firms available to buy assets from the failing ones. Additionally, the FDIC's orderly liquidation authority requires that debt holders hold sufficient debt to absorb the losses (not the case in the last crisis), otherwise, the FDIC borrows funds from Treasury.

Regulators should use information contained in living wills proactively, to root out and address dangerous interconnections institution by institution through off-balance sheet exposures, collateral pledges, hedging strategies, and other areas that caught regulators unaware in the last crisis. Additionally, regulators have an opportunity to use information in living wills to build a comprehensive roadmap of interconnections to capture the common risks, linkages, and interdependencies between the megabanks and non-banks across the financial system, assessing threats that institutions may pose to financial stability of other megafirms and American households.

If regulators expand their use of living wills from a deathbed document to a roadmap of interconnections in our financial system, they can take preemptory, supervisory action to force firms to break off dangerous interconnections that pose a threat to our system. Dodd-Frank provides regulators with significant authority over megafirms that pose a grave threat to financial stability, including requiring the company to terminate certain activities, stop offering certain

products, or sell certain assets. Former Federal Reserve Chairman Ben Bernanke testified before Congress in July 2012 that living wills "provide a blueprint if you wanted to break up banks or hive off parts of banks. The living wills provide some information about how you could do that in a sensible way."

Ending too big to fail can be done; it must be done. It will not be easy. Ending too big to fail will require hard choices by companies to break up certain products or business lines and break off dangerous interconnections. Ideally, companies should do that on their own, which might even unlock additional shareholder value, but some have gotten bigger with complicated operations. Ending too big to fail requires banking regulators to shift their primary approach from the safety and soundness of each individual institution, to the safety and soundness of the financial system by focusing on the complex interconnected web these companies have formed. Regulators must protect taxpayers by ensuring that megafirms break off interconnections that pose a grave threat to our financial system. This requires steely courage of financial regulators to protect the nation's financial system from any one institution that can pose grave risk to hardworking Americans. However, if done right, our nation will take a major step toward preventing another crisis, or at least limiting its impact to those who made risky choices. Our nation's history of the crisis and resulting TARP bailout must not be allowed to repeat itself.